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THE MANUFACTURE OF LARGE FIRE-CLAY GOODS

Many makers of large articles in clay, especially the manufacturers of tanks, baths, and other large sanitary appliances, appear to be entirely oblivious to the characteristics which the clay of which such articles are made should possess.

Sanitary pipe makers are, as a class, much more careful in selecting clay with the desired properties for their goods, although the difficulties of the sanitary ware manufacturer are liable to be far greater if he does not possess the necessary knowledge than when pipes are being made.

In the first place it is necessary to consider what properties are required in the materials composing a large tank or bath, glazed inside and out, so that an attempt may be made to obtain a material, or mixture of materials, which shall as nearly as possible possess these good properties, whilst not, at the same time, possessing more than a minimum of bad ones.

The chief characteristics of any clay or clay mixture may be considered under the following heads:—Contraction, porosity, fineness of material, refractiveness, and composition. In all classes of clayworking these must be taken into consideration, but in the manufacture of large articles some of them are particularly important.

THE COMPOSITION OF THE CLAY.

The chemical analysis of a clay will but seldom reveal its suitability or otherwise for the manufacture of baths and tanks, except in so far as it reveals the presence of an unduly large amount of fluxing materials, or of iron compounds. The first of these would prevent the goods being fired at a temperature sufficiently high to melt and mature a really durable glaze, whilst the iron compounds would seriously affect the color when certain classes of goods—such as white or straw-colored ware—are to be made. Certain iron compounds would also cause other troubles, which will be dealt with later, but the ordinary chemical analysis does not distinguish the different forms in which iron may exist in a clay.

The majority of the clays used for the manufacture of very large articles are of the fire-clay class, and contain upwards of 65 per cent. of silica, about 1.5 per cent. of iron compounds, and the same proportion (or less) of fluxes. The remainder of the clay is almost entirely alumina, of which there should be about 30 per cent.

Clay for large articles should not be too fine, hence the alluvial clays are, as a rule, unsuitable for this class of work, as the method of their formation has caused them to be made of extremely fine particles, so that they cannot withstand repeated changes of temperature so easily as a coarser clay. It is in consequence of this that the rock clays, whose particles are much larger, are the most suitable for the production of large ware.

The purity of the clay and its freedom from undesirable ingredients is another matter of great importance to the clayworker. Thus the fire-clays have, as a class, the great disadvantage of containing pyrites or "ironstone," which is a frequent cause of unpleasant discoloration.

IMPURITIES.

Unless these impurities can be removed the clay can never be satisfactorily used for the best class of sanitary ware, but much may frequently be done by a very careful sorting of the clay before it is sent to the grinding mills. Pyrites nodules are particularly easily recognizable, and if the large lumps of clay received from the pit are broken carefully with sharp, rapid blows of a hammer, the clay will split without breaking the nodules. These can then be cut out of the clay so completely that the small amount of pyrites left can do little or no harm. It is, however, essential that the clay should be broken by hand into pieces not larger than a boy's fist, or some of the ironstone nodules will be overlooked. This work of sorting out the clay should be placed in the care of thoroughly conscientious men, as if it is carelessly done the defect can never afterwards be removed, though certain additional precautions are possible which will, to some extent, tend to minimize the evil effect of any undetected pyrites.

Other impurities, such as pieces of vegetable matter, coal, etc., may be picked out at the same time as the ironstone,

but there are others, such as certain shales and a variety of minerals, which cannot be so removed. Fortunately, there are many clays which are sufficiently pure to require no treatment beyond careful sorting. The others are not suitable for large goods, as the cost of purifying them would prove prohibitive.

The removal of less suitable clays from the main bulk must also be carried out at the same time as the pyrites is removed, providing that it has not been done at the pit. It is, however, far better that the man in charge of the mining of the clay should set aside the better qualities of clay and keep them separate from the rest, so that most of the sorting out of different clays may be avoided. This is particularly necessary when the clay seams twist and turn considerably, so that there is some likelihood of inferior seams becoming mixed with the superior clay in the mine.

As the clay for large articles is required to be somewhat coarse in texture, it should not be exposed to the weather before grinding. Above all, it must not be allowed to "weather" before being sorted, or the atmospheric influences will convert some of the pyrites into soluble iron compounds, which can never be removed from the clay at a cost which will allow of a profit on the goods.

PREPARING THE CLAY.

Theoretically, the best way of preparing a clay for large articles, which would be free from the majority of impurities, would be to wash it; but in practice this has not worked satisfactorily, because the washed clay separates into layers of varying composition, and the ordinary methods of mixing are insufficient to render it as homogeneous as clay which has not been washed. In addition to this, the cost of washing has a serious effect on the composition of the majority of fire-clays, because it removes some of the silica, and in any case its cost renders it impracticable to most manufacturers.

Various materials are mixed with the clay during or after grinding in order to confer on it certain properties which in its natural state it does not possess. Thus, to lessen the amount of contraction of the clay in the kiln, and to prevent the goods from warping, it is usually necessary to add a considerable proportion of non-contracting material. The composition of this will, naturally, vary with the clay used, and its amount will depend upon the plasticity and the contraction of the clay. The simplest material for this purpose is burnt clay, as this has precisely the same composition as the main bulk of clay used without any power of shrinking during the drying or in the kiln. This burnt clay may be specially manufactured (by making the clay into bricks and firing them on the floor or in odd corners of the muffle kiln), or broken goods may be used. In the latter case care must be taken not to introduce too much glazed ware, as the glaze acts as a flux and tends to vitrify the ware. Burnt clay, for baths and similar large articles, should not be allowed to become mixed with coal or ashes, as these only make it impure. On this account it is best to burn it in a muffle kiln in the shape of bricks.

When it can be obtained sufficiently pure, and especially when the clay is somewhat poor in alumina, the substitution of burnt bauxite for burnt clay is a great advantage. Bauxite

is an impure alumina ore which contains upwards of 60 per cent. of alumina, about 10 per cent. of silica, and 20 to 30 per cent. of water, besides varying small amounts of fluxes and iron compounds. As its composition varies greatly, it should be analyzed before use to ensure its freedom from an undue proportion of objectionable ingredients. It is burnt in a manner similar to clay, and, like it, is mixed with the clay before or after grinding. As burnt bauxite has little or no binding power, it is convenient to temper it with a quarter of its weight of fire-clay before burning.

The proportions of burnt clay or bauxite to be added to the raw clay will depend on the plasticity and contraction of the latter. A strong clay will allow of the addition of a much larger proportion than will a less plastic clay. Hence no definite proportions can be given, though four parts of raw clay and one of burnt material is frequently used, and some very plastic clays will stand the addition of half their weight of burnt material, and still enable the workmen to finish the surface properly. The best limit is that at which a moderately skilled workman can obtain a good finish on the clay, and when the skill of the worker increases, more burnt material may be added. As men vary greatly in their power of working with material of the composition here referred to, some care must be exercised, as it is rarely desirable to add less than one-quarter of burnt material, and few men can work with clay containing more than one-half. At the same time much may be done with care and practice, and by having the materials at the right degree of fineness. This will be referred to later.

For portions of articles which are particularly liable to shell off, it is sometimes necessary to use a special clay, which has a greater binding power. The use of a more plastic mixture will not help matters much, as the binding power is required in the firing rather than in the earlier stages. Some fluxing material must, therefore, be added, and of these plaster of Paris is one of the most convenient. Only a very small proportion—not exceeding one-fiftieth of the weight of dry clay—should be used, or other difficulties will ensue. Indeed, the use of a flux is to be avoided except in those cases where it is absolutely necessary, and then only when other means of overcoming the difficulty have failed.

SIZE OF CLAY PARTICLES.

Although many manufacturers have failed to obtain satisfactory results in the manufacture of large goods because they have not had clay of suitable composition on which to work, there are far more who have failed to work their clays to the best advantage because they have not sufficiently studied the physical properties of their clays. Thus, in the majority of sanitary works the clay is ground and passed through a certain sized riddle without anyone knowing whether this particular mesh is, or is not, the most suitable for the clay in question.

A little consideration will show that the ability of a piece of fired clay to withstand repeated changes of temperature will depend on the amount of surface of the particles which are in contact with each other, in other words, on the porosity of the fired clay. In the wet clay, on the other hand, the amount of water surface between the particles will be of

great importance in deciding the extent to which they can move over each other. Consequently, *porosity* and *plasticity*—both of which in a pure clay are referable to the size of the particles—are of fundamental importance in the manufacturing of large articles.

According to Seger the particles of pure "clay substance" are less than .0002 inch diameter, and particles of .013 inch diameter and over are entirely unplastic, and are to be designated as sand and mineral matter. These definitions have been generally recognized and adopted as standards. The manufacturer of large articles in clay must work between these limits, because he does not wish to use a plastic material more than is necessary on account of its great tendency to shrink and warp or twist in the kiln. Hence he will reduce the amount of fine grains to as low a limit as possible, and will use large grained material. At the same time a certain proportion of true clay in fine particles is necessary in order to give the material sufficient plasticity to enable the workman to give it the necessary form and shape, and to hold it together whilst it is being transported from the making shop to the kiln. Sand alone will not bind together sufficiently well for it to bear its own weight when in the shape of a bath or tank, to say nothing of the transportation to the kiln.

Baths and other large articles should, therefore, be regarded as made of non-plastic material to which some clay has been added, rather than as made of clay. Even when the fire-clay is used without admixture this definition still holds good, for, as already stated, fire-clay is much richer in silica than true clay substance, and owes its refractiveness largely to this silica.

WHAT IS "REFRACTORY"?

It is necessary at this point to avoid any misconception as to the meaning of the term "refractory." Pure clay substance is one of the most refractory substances known, but its efficiency in this respect when made up into articles varies greatly. Thus, pure china-clay will stand any temperature up to 1,900 deg. C. without melting, but when made into goods (a difficult matter because of its slight plasticity) the goods will not withstand sudden changes of temperature nearly so well as fire-clay, which is by no means so pure, but which is composed of coarser particles. Hence in using the word "refractory" care must be taken to distinguish between the burnt clay itself and the clay made into goods, and then fired.

Ordinary siliceous clays, such as typical fire-clays, are usually of a suitable degree of fineness when they have been passed through a sieve with six meshes per linear inch. Many makers contend that this is too coarse to "finish properly," but this is doubtful, and the use of a finer riddle (say twenty meshes per inch) will usually lead to difficulties with the clay in the kiln, unless other means are adopted for overcoming them. Thus a clay which has been too finely ground may often be used if it has been previously mixed with sufficient fine sawdust to overcome the density of the fine clay, and, by burning out in the kiln, leave an article of very porous clay. Some makers, in fact, prefer this to a clay more coarsely ground. It is running a serious risk, though to rely on the presence of sawdust to overcome the defects of an insufficiently careful grading of the clay during or after the grinding.—*British Clayworker*.

NEW YORK'S MINERAL PRODUCTS

New York state's mineral products yielded \$37,118,430 during the last year, according to statistics compiled by the New York State Museum. This is a gain of \$1,647,443, or about 5% over the figures of last year. In three years the gain has been nearly ten millions. These figures cover returns from 30 mineral materials now in commercial use. The iron industry shows considerable activity, the output last year being greater than at any time since 1891. There are nine mines in use now, three new ones being opened during the year.

The manufacture of clay products contributed an aggregate value of \$13,955,300 in 1906 as compared with \$14,280,016 in the preceding year. The decrease was due principally to the lower prices obtained for structural materials. The output of clay building materials (brick, tile, fireproofing and terra cotta) was valued at \$11,063,433. The number of brick made was 1,600,059,000, of which 1,230,692,000 was reported by the plants along the Hudson river. Pottery is a growing branch of the clay working industry; its share in the total last year amounted to \$1,795,008, represented mostly by the finer wares, porcelain and semi-porcelain. There were 265 clay-working plants in operation distributed among 48 counties.

The production of Portland cement in this state has increased from 65,000 barrels in 1890 to 2,423,374 in 1906.

The unprecedented demand for clay building materials which was experienced in nearly all sections of the state throughout the previous year continued to exert a favorable influence on the clay-working industries during 1906. The aggregate value of the production of clay materials of all kinds for 1906 was \$13,955,300. There were 265 companies or individuals actively engaged in the industry as compared with 250 in the preceding year. Of the 61 counties of the state, 48 were represented in the returns as having an output of clay materials. Compared with the production of 1905, which was valued at \$14,280,016, there was a decrease of \$324,716, or about two per cent. The falling off in the valuation of building brick alone more than equaled the aggregate decline.

The value of the output of common building brick for the year amounted to \$9,302,165, as compared with \$9,751,753 in 1905.

There were 22 potteries that reported as active in 1906, the same number as in the two preceding years. They were distributed among the following counties: Albany, Chautauqua, Erie, Kings, Madison, Monroe, Nassau, Onondaga, Ontario, Schenectady, Suffolk, Washington and Wayne. Onondaga holds first place in point of production, with a total for 1906 valued at \$858,270, as compared with \$718,895 in 1905 and \$673,590 in 1904. Kings county is the second largest producer, contributing an output valued at \$306,105, against \$308,443 in the preceding year and \$279,009 in 1904.

The production of clay materials in Albany county in 1906 amounted to \$675,099, an increase of about \$30,000 since 1904. The value of Rensselaer county's output was \$296,762 in 1906. The value of common building brick manufactured in Albany county in 1906 was \$461,399, as compared with \$439,238 in 1905. The value of other products of Albany county in 1906 as compared with 1905, is as follows: Crushed stone, \$96,200; 1905, \$90,800. Total limestone production, \$100,800; 1905, \$101,425.

"IDEAL" MACHINES IN THE LEAD

Our readers will recall an announcement a few months ago, to the effect that the Ideal Concrete Machinery Company, of South Bend, Ind., had closed up what was said to be the largest contract for concrete machinery ever secured, the contract involving \$250,000.00 worth of "Ideal" Block Machines.

From time to time we have had additional evidences of the progress of this company, and are now advised that within the past six months, they have shipped *six full car-loads of "Ideal" Machinery* into one Spanish-American country, and it may also be of interest to note that in the last shipment were included: 8 "Ideal" Continuous Batch Mixers, fully equipped with power.

With these mixers are included 2 large Sill Machines; 10 24-inch Block Machines; 6 Brick Machines, and a great many accessories and attachments were sold to one concern.

This record is not remarkable for the "Ideal" Company, and we are further advised of large orders now in hand and recently shipped to Auckland, N. Z.; Sydney, Australia; Kobe, Japan; Calcutta, India; Shanghai, China; Buenos Ayres, Argentine Republic; Rio de Janeiro, Brazil; Lima, Peru; Montivedio, Uruguay; Budapest, Hungary; Valparaiso, Chile, and other places.

The "Ideal" people sent out the most complete and comprehensive catalogues—regular encyclopedias of information—and their catalogues are fully "coded" and indicate, gross and net weight, cubic measurements, and other data particularly helpful to domestic and foreign buyers.

The great popularity of "Ideal" products is evidenced by the following letter taken from hundreds on file of similar tenor:

Minneapolis, Minn., July 13, 1907.

GENTLEMEN: A year ago last May, I purchased a Model "A" 8x8x16 inch machine and built a two-story house of "Ideal" blocks. Everyone stops to admire my home, saying it is the only concrete block house they ever saw that they admired.

I never saw a block made until I set up the "Ideal" machine you sent me. I drew my own plans and made every block and laid them up with no experience whatever in that line.

I have delayed writing you to let you know how well pleased I am with the machine as I wanted to send you a photograph of what it was possible for a man to do who has had no experience in the building line.

Building my own house has thrown me into the concrete business, and now I can hardly keep up with my orders.

Respectfully,

IDEAL CEMENT STONE & SIDEWALK CO.,
173 Bedford Street.

The comprehensive scope and character of the "Ideal" line can only be understood by getting their catalogue. "Ideal" block machines are made in two types, model "A 16" and model "E 24." The bases of these machines are interchangeable to receive attachments for making the blocks 6, 8, 10 and 12 inches thick, also 4, 6 and 8 inches high, and any length from 1 inch to 24 inches.

Other attachments are cleverly worked out to produce all kinds of special blocks, such as octagons, circles, water tables, ornamental belt courses, caps, etc.

In addition to the special line of concrete block machines, these people also have a large trade on their "Ideal Special" Sill and Lintel Machine, for making solid or re-enforced blocks, 8 inches high, 18 inches thick and 60 inches long. The machine is also adjustable for any smaller size, in height, thickness and length, and is a very desirable adjunct to the block business for producing sills, caps, water tables, curbing, or any special ornamental designs needed.

The "Ideal" people also produce their Model "A" Brick Machine, which has jumped into popularity. Fancy faced brick are made as easily and as rapidly as plain bricks, on this clever little machine. The Brick Attachment may also be had for the Model "A" 16 inch Block Machine Sets, constructed on the interchangeable plan.

In the line of ornamental molds, such as balls, spindles, columns, lawn vases, fancy cap and belt course designs, the "Ideal" people have a most complete variety.

For the past year they have been working on a mixer, designed particularly for the needs of the concrete block manufacturer. The "Ideal" Continuous Batch Mixer is now on the market, and we are advised that before a photograph could be taken of the machine, a large number of orders were booked.

The mixer is unlike any other machine on the market, and is fully protected by patent. The materials are mixed dry in a revolving drum of peculiar construction, and by the simple action of throwing in a clutch, the drum is reversed, which automatically and quickly discharges the contents into a lower mixing trough; water is added, and the entire batch is mixed and discharged in a few moments ready for use.

While this is being done, the drum is receiving the next batch, hence the name, "Ideal Continuous Batch Mixer." The mixer is symmetrical in appearance, and is substantially built of steel and angle iron. It is operated by a two horse power engine.

Every block maker or man contemplating engaging in the business will do well to send to the Ideal Concrete Machinery Company, of South Bend, Indiana, for their primary catalogue. We are informed that with every machine sold a very large and comprehensive book of instructions is sent to the purchaser, which contains information of particular value to the users of "Ideal" machinery.

ELOPEMENT CLOSES POTTERY

Conshohocken, Pa.—"Don't worry, mother; Elsie and I were married on the Fourth and will be home on Saturday." This message relieved the tension in the home of two families here and brought joy to the employes of the pottery works at Spring Mill, which has been closed down for over a week awaiting the return of John Sharf, who sent the message. The groom is the son of A. Sharf, the Spring Mill potter, and is the engineer of the plant. The young man's absence served to cause a temporary shut-down of the plant and the employes will be glad when he brings home his bride.

ST. LOUIS A LARGE PRODUCER OF CLAY

Washington, D. C.—St. Louis produced and sold about \$5,000,000 worth of clay products in the year 1905. This is approximately one-thirtieth of the entire output of the United States for that year. The Cheltenham district furnished the larger portion of the products. An attache of the United States Geological Survey has completed a brief description of the clay resources of the St. Louis district, and from it these facts are taken.

The products include those of fire clays, dug in a single section within the city limits, and the production makes St. Louis one of the most important centers of the clay industry. In addition to fire clays the products are from shales and brick clays.

The area from which fire clays are derived has its center in a section of the city known as Cheltenham, lying south of Forest Park.

The feature to which the presence of the fire clay within the area named is mainly due is a faint synclinal basin, whose center is not far from the southeast corner of Forest Park. North and northeast of this point there are no mines. The lowest level from which the clay is mined is 404 feet above sea level.

The choicest of the clay is sold for glasshouse use. At several of the mines the clay is assorted, that which is freest from impurities being sold in the raw condition for glass pots. Good clay which contains a small amount of impurity is washed and then sold for the same purpose. For brick it is not necessary that the clay be so pure. Much of the fire clay mined in Cheltenham is used without assorting for ornamental and facing bricks, or is mixed with various other clays to make sewer pipe.

About nine miles northwest of Cheltenham and three miles east of Creve Coeur Lake the St. Louis Vitriified and Fire Brick Company operates a mine and factory. The base of the fire clay bed at this point is nearly 90 feet below the upland level. The thickness of the clay is 12 to 15 feet, 12 feet of good clay being mined. It is practically certain that this clay is at the same horizon as that mined in the city of St. Louis.

In view of the wide separation of the points at which the Cheltenham fire clay is mined it is quite probable that it may be found at many places where no prospecting has yet been done. A characteristic feature of the coal measures near St. Louis is its very large proportion of plastic shales. These are largely used in the manufacture of vitrified paving brick, both in St. Louis and at points farther northwest, near Creve Coeur Lake. This shale is that which appears in the sections above the fire clay, but west and north of the city it occurs in thicker and more continuous beds, of uniform quality. At Castello and Malcolm stations almost the entire 40 to 55 feet intervening between the loess and the coal seam overlying the fire clay consists of workable shale, generally of a red or broken color, but with some blue shale at its base.

Similar clays from a place four miles northwest of Glen-coe, a station on the Missouri Pacific railroad about twenty miles west of St. Louis, are largely used in St. Louis in the

manufacture of terra cotta and sewer pipe, though shales from this vicinity have also been used extensively for brick. Yellow and blue shales that occupy the same stratigraphic position are extensively mined at Prospect Hill, a few miles north of St. Louis, and used in the manufacture of Portland cement, being mixed for that purpose with the St. Louis limestone.

Many yards in and around St. Louis are making red brick from the loess which is commonly called "yellow clay." This is rarely less than 10 to 15 feet thick, and near the bluffs may be three or four times that thick. It differs in texture at different depths, the upper portion being "stronger," more claylike, and less mealy than the main body.

Partly to obtain a thorough mixture of these different grades and partly to allow some weeks or months of "sweating," thus reducing all lumps, large quantities of the loess are commonly brought in from the pits and kept under shed for some time before using. A good grade of red brick is made, and the supply of good loess here and elsewhere is limitless.

BRICK PLANT TO BE RUN BY LADIES

The How-Kim Brick Manufacturing Co., was organized recently to erect a brick plant on the Ellison farm east of Cherryvale, Kansas. A deal was closed with John Ellison for a site and several hundred acres of gas leases and an option has been closed for considerable more. The plant will be built of machinery of the most modern type and the facilities for making brick will be equal to the leading companies of this field. Construction work will begin at once, and it is expected to have the plant in operation within 90 days. The plant is on the main line of the Frisco railway and is assured excellent shipping facilities. When completed the plant will have a daily capacity of 60,000.

The industrial enterprise is unique in this respect. It is owned and managed by two ladies, Miss Helen Kimber and Miss Howard, both of St. Joseph, Mo.. The former is well known, having taught in the public schools of Labette county. Miss Kimber devoted considerable time in the interests of woman suffrage and was at one time president of the Kansas State organization. However, she soon turned her attention to more promising pursuits, financially, and as one of the leading business women of the west. Both she and Miss Howard are splendid examples of the successful women in business and they are demonstrating to their sisters that mere man is not a necessary adjunct to a successful business career and that success in business is not confined to men only.

These women have engaged in a number of business enterprises before and have always been successful. They own 1,600,000 acres of land in Mexico across the Arizona boundary line. This tract of land is 97 miles in length. This country is developing and this land will make its owners amazingly wealthy some day. The How-Kim brick plant starts out with every prospect of success and thus another industry is added to Cherryvale's already big list, but still there's room.—*The Cherryvale Daily Republican*.

A paper read before the twenty-first annual convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February 4-9, 1907.

THE NEED OF THE HOUR

C. B. PLATT, VAN METER, IOWA.

In considering this subject I find that it insists on presenting itself in the plural. Clayworkers seem to have *needs* rather than *particular* need.

I feel that you will all overlook any introductory history of clayworking which I may omit in this paper.

I trust also that you will forgive me if I fail to be interesting or to throw any new illuminations upon the screen of the clayworker. Success loves the sound of its own story, but probably even the most success-seasoned clayworker present has tired of being told of the step-burdened process of producing clayware. It may be even his eyes would brighten in anticipation of new fields to occupy and conquer, could evidence be shown that the clayworking process was to soon *start* at the burning end and finish with the forming. Unfortunately I can not inspire this interest. It is said, however, that Thomas A. Edison has appreciated this need, so there is hope.

That clayworking is so generally successful is due wholly to the fact that clayworkers, as difficulty-overcomers, are the real thing. Born to conquer, they wrest from one of the most wasteful manufacturing processes on earth, a competence and a fortune. Though immersed in a flood of waste they pass safely through and camp triumphantly on the shore of success. Waste is not usually of their making, but has been handed down from generation to generation.

Clayworking has many examples of most admirable business generalship; examples which are not confined to the most prominent. Some very tall oaks have grown from rather small acorns. Undismayed by repeated backsets in the journey from a daily production of ten thousand to a capacity swelled to meet the demands of a building-mad market, today sees the triumphant brickmaker perched upon that sun-kissed pinnacle of production—500 bricks a minute from the one manufacturing unit.

The brickmaker has passed with unshaken nerves through the experience of meeting in his field of competition the material which can be "made today, laid in the wall tomorrow;" he has not lost his nerve in this the "cement age," though appreciating the possibility that every fireside has within its reach a cement block factory, and he still pushes to the front with the product that will not be downed—burned clay. He recognizes, however, that these competitive materials have a place in the market, based on more or less merit, and that whatever the degree, it is taken from the clay-working field.

Urgent market demand is not always the cause for the birth of an industry. The establishment of some six thousand clayworking plants in this country has not been due entirely to urgent market demands. Thousands of dollars have been planted in this industry unbacked by market and fath-ered by only the slightest knowledge of the materials or the general process of manufacture. This is because claywork- ing is supposedly a seventy-five per cent profit proposition,

in which there is room for waste and a chance to develop a knowledge of the business. All this is naturally conducive to an effort to get the business down to a basis of scientific economy, or a recognition of the real margin or profit.

The need of the hour is, beyond doubt, economy. Economy effected merely through operating speed, while in some instances eminently satisfactory, is not available throughout the field. Should all attempt speed economy there is no question but the need of the hour would soon be a market.

There is room for doubt as to the economy to be derived in departing from a production of twenty thousand daily, with its modest equipment requirements and simple drying methods to the intermediate point of production in the forty thousand daily capacity with its more extensive equipment requirements and its added administrative expense. Economy gained through increased capacity is not in direct proportion to the increase. The plant with a daily capacity of twenty thousand, or there about, having as it does at this time, means of effecting the most economical drying, through the use of natural dryers equipped with elevating truck systems and not burdened with heavy equipment cost and large administrative expense, is best qualified to effect economy of operation.

Since the economy of speed and continued operation is only available to those situated in large demand markets, the majority must look for greater economy and greater profits through a saving of waste. Waste is most marked in the production and use of power and in loss of heat in burning operations. Engineers believe that steam engineering has accomplished practically all that can be accomplished in the conserving of heat units in fuel burned under steam boilers. Be this as it may, the development of power through the agency of the steam boiler and its application through the steam engine is a wasteful process. Steam power plants, particularly of comparatively small rated horse power are seldom well managed, generally poorly equipped and a constant source of danger, delay and expense.

When available at reasonable rates, electric power is an attractive substitute for steam, in that it gives no concern or expense except during active plant production.

The gas engine, operated with producer gas, is a satisfactory and economical substitute for steam, available in all cases.

This system of developing and using power is worthy of careful consideration, regardless of any failures which may have been made in its use in this country. It is probably true that poor results are attributable largely to faulty installation or to poor system. We know that producer gas engines are being successfully used in Europe and in electrical power plants in America. Americans are growing somewhat shy of new sure thing propositions, that is, some Americans, which is well, particularly in certain lines, but when we find that entirely responsible concerns in America are taking up the manufacture of suction gas producers and gas engines and selling such plants under positive guarantees, both as to efficiency and reliability, we should give ear to their claims and seek through this agency a means of saving a most marked waste in power plants.

The saving effected in the suction gas producer plant is accounted for through comparison as follows:

"Some of the advantages of a suction gas producer and gas engine plant over steam are higher efficiency, greater compactness, fewer auxiliaries, less attendance and fuel, no smoke, no pressure, no condensation, no heavy stand-by losses, no danger, no smokestack, the sum of which means cheaper, more reliable and more satisfactory source of power.

"In actual practice the average thermal efficiency of a steam plant of 100 h. p., with varying load, is three to five per cent. With a gas engine and suction producer plant the efficiency is sixteen to twenty-five per cent, or in other words, a steam plant of 100 h. p. or under, will use six to ten pounds of coal per h. p. hour while a producer plant will use but one to one and three-fourths pounds.

"This great reduction in coal consumption is due to, first, higher efficiency in the producer than in the boiler; second, very much higher efficiency in the gas engine than in a steam engine, and third, the absence of condensation losses between producer and engine. The efficiency of a suction gas product is seventy-five to eighty per cent. while that of a small steam boiler is fifty-five to sixty per cent. The efficiency of a small steam engine is only about six per cent instead of twenty-five to thirty per cent as given by a gas engine.

"The very best thermal efficiency obtainable in a triple or quadruple expansion steam plant does not exceed sixteen to eighteen per cent, while with the gas engine and producer plant a combined efficiency of almost double this may be obtained, even in medium and small sized units."

The comparison is still more in favor of the gas engine when we have to take into consideration poor water supply, which condition is so conducive to repair and stoppage losses, to say nothing of greatly reduced fuel efficiency.

In the matter of first cost, the gas engine producer plant suffers somewhat in comparison with steam. A producer gas engine plant up to two hundred h. p., as required in brick plants, would cost approximately \$65.00 per horse power. This higher cost is not of much importance, however, when we find that responsible manufacturers of the gas engine equipment guarantee an earning on the investment of thirty per cent through fuel saved.

Clayworkers are sometimes advised to install plain side valve engines in order to utilize the waste or exhaust steam in drying their wares. The drying of ware with exhaust steam is, of course, commendable when the installation has been made, but at best it is unreliable and only partially economical since practically half of the drying period is under live steam conditions. Clayworkers in the north have found steam dryers a source of much annoyance during the winter months and a source of much expense as well. There is no economy in creating a waste in order to use it. Steam use in drying is most economically demonstrated in driving fans for a kiln waste heat dryer. There seems to be no objection to steam in that case, provided no other power is available, and as long as it is necessary to so use the surplus heat from kilns.

Waste heat from kilns should be utilized where created and through natural draft forces, such as are present in well planned continuous kilns. The time is without doubt fast ap-

proaching when the successful operation of the producer gas fired continuous kiln will bring it recognition as the most desirable instrument with which to effect economy in burning. Producer gas as a kiln fuel is perhaps not as yet fully demonstrated as valuable, except in a well constructed continuous kiln. Experiments have been made with this fuel in down draft kilns which may not have proved any particular economy in its use, but these experiments were made under quite different conditions than maintain in a well planned continuous gas fired kiln and should have little influence in a decision for or against the continuous gas fired kiln.

The point most favorably effecting the novice, inspecting the operation of the continuous gas fired kiln, are, first, ease with which the heat is generated, maintained at stated temperatures and directed to any part of the burning chamber; second, cost of fuel and attendance per thousand brick and convenience in loading and unloading.

In connection with electricity driven machinery, or with producer gas power, the gas fired continuous kiln and the direct heat radiating dryer offers an ideal proposition for the waste-weary brickmaker. The direct heat radiating dryer has in it much to commend it in that it is always ready to do its work, one track or all, winter or summer, rain or shine, and it does not cost a cent while not in operation. Satisfied users of this system state that they are drying brick at a cost of fifteen to twenty cents per thousand.

The questions of applied economy have to deal with a wide variation of conditions. There is a very wide variation in product, in raw materials, in market conditions and in financial ability. There is, therefore, no plan that will be suited to all.

Steady operation, either during a limited period or throughout the year, under the minimum waste in the use of fuel, is the point toward which to work. The one question in this connection is, where is the demand point when it becomes advisable to give up the moderate equipment of the small capacity plant for the more expensive and complicated equipment required for the year around plant.

This point can only be satisfactorily settled through a complete acquaintance with local conditions and through, mature business judgment.

CANNOT EXCAVATE HAVERSTRAW STREET

New York City, N. Y., July 9.—Additional efforts were made by several citizens of Haverstraw to prevent the further excavating of the land in and about what was once Jefferson and Rockwell streets, so as to avert a repetition of the landslide of last year, before Justice Morschauser.

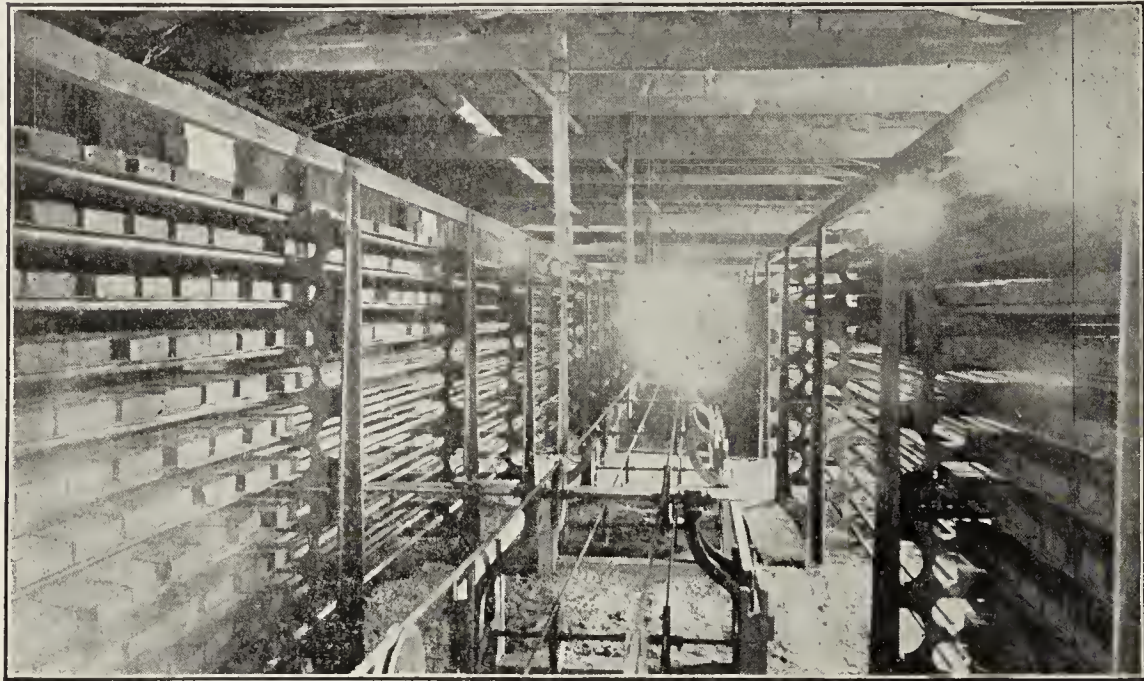
An order to show cause why a permanent injunction should not be granted restraining the brick manufacturers from excavating was recently granted by Judge Fallon, which was made returnable at once. It was contended that the people living in the vicinity of those thoroughfares were in constant fear of their lives and that the village officials should protect them.

Attorneys for the brick men applied for an adjournment to July 22 at Poughkeepsie for argument, which Justice Morschauser granted, but the matter was accompanied with an injunction restraining the land owners from excavating until the question is finally disposed of.

ARTIFICIAL DRYING

Foremost among the latest clay working improvements and one which has had more to do with the success of the up-to-date brick-making industry has been the introduction of the "Martin Patent System" of Artificial Steam Brick Drying. This "System" is one that is causing genuine surprise among the craft on account of its simplicity as compared with the results obtained.

Many brick-makers have hesitated to consider the instal-



tem" is under the supervision of the factory office at Lancaster, Pa., and the manufacturers and owners of these important (patents) have authorized no one to sell or construct "Martin Patent System" Rack Pipe Steam Brick Dryer, and it is to your interest to consult The Henry Martin Brick Machinery Mfg. Co., Inc., if interested in handling or drying brick in the most economical manner.

The illustrations shown herewith are views of the Union Brick Co.'s plant at Shamokin, Pa. This plant is a 30,000 daily capacity plant. Cut No. 1 shows the interior of dryer building, cable conveyor, etc., and cut No. 2 shows the interior view of the kilns, showing the setters, and man tossing the brick from pallets. As soon as the six bricks are tossed off the pallet he places the empty pallets on the under cable, on which pallets travel back to the brick machine. You will note that this is decidedly labor-saving and dispenses with the truckers and wheelers, and that the plant is thoroughly practical automatic throughout.

MAKING LIBRARY FIREPROOF

Up to date 320,000 square feet of terra cotta hollow tile has been supplied by the National Fireproofing Co. for the New York Public Library at Fifth avenue and Forty-second street. It is the aim of the architects to make the new library a perfect type of the absolutely fireproof building

Of the 320,000 square feet of hollow tile already supplied

lation of a brick dryer on account of the first cost, the extensive equipment of rolling-stock and the cost of operation and maintenance. The new "Martin Patent System" referred to is presented as a economical method of drying either stiff-mud or soft-mud building bricks, as all cars are dispensed with; there are no tunnels, fans or other equipments of this kind to be kept in repair, and at the same time the brick are thoroughly dried over night. The brick made one day are ready to set in the kilns the morning following

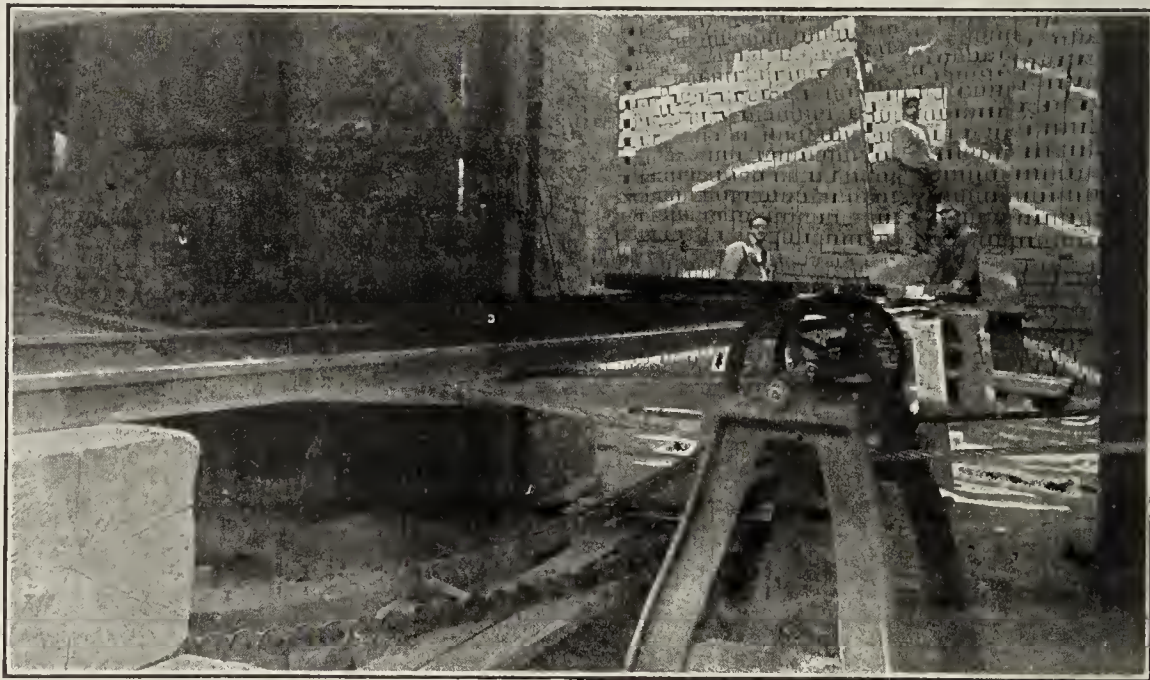
The heat used in this dryer is furnished by steam circulating through special designed coils of pipes, these being supported by heavy cast iron columns. The buildings necessary to cover the drier are inexpensive, as the driers are so constructed that the roofs can be attached to the driers themselves.

The "Martin Patent System" is practically fire proof, no woodwork being used in its construction whatever.

Another valuable feature noticeable in this new "System" is that of handling the brick into the driers by the cable conveyor; this conveyor handles the green brick direct from the machine into the drier with a great saving of labor and the most satisfactory results. This conveyor also takes the brick after they are dried to the kilns—making the work a continuous one.

With this new "Martin Patent System" the brick-maker is made independent of the weather or seasons.

The sale and construction of this "Martin Patented Sys-



237,000 feet are for floors, 29,000 for partitions, and 54,000 are book tile for the roof. There is still a great deal more of the fire-resisting material to be supplied, for column covering, furring and more partitions. It will probably be used also, in connection with the steel bookcases. These bookcases will have 63 miles of shelves and will hold about 3,500,000 books. There is to be nothing about the structural part of the building itself which can burn, and if a fire should start in any room or hallway the fireproof partitions and floors would keep it from spreading.

WANT U. S. BRICK COMPANY'S BOOKS EXAMINED

Twenty-two minority bondholders of the United States Brick Works attended an interesting meeting at the Board of Trade rooms at Reading, Pa., to protest against the exchange of their bonds for preferred stock.

Among those present were Peter D. Wanner, who appeared for Josiah Thompson and other Philadelphia investors holding bonds of over \$40,000; Wm. C. Billman, Jeremiah Auge, Jacob Barbey, Charles Grainger, A. S. Deeter, John J. Sailer, Philip Von Neida, George Appel, Charles W. Yocum, Frank C. Hosley, Harry M. Albright, Ira P. Rothermel, Jacob B. Fricker, Harry F. Kantner, Howard L. Boas and others.

On motion of Mr. Boas, Wm. C. Billman was chosen chairman of the meeting. This was seconded by Harry M. Albright.

"Are there any stockholders present who wish to join this minority movement?" asked Mr. Billman. "If there are, let them step forward and enroll."

Charles Grainger, Klopp & Kalbach, of North Heidelberg; Jeremiah Auge and Philip Von Neida complied with the request.

Next Jacob B. Fricker, of the minority committee, read the following statement:

"Gentlemen: Before submitting our report as a committee of the minority bondholders of the United States Brick Company, we beg to say that many holders of these bonds, some of whom signed the agreement proposed by the bondholders selecting the trustees, do not appear to have a proper conception of the plan of exchanging their bonds for preferred stock. In order that all bondholders as well as the public may clearly understand the situation and that erroneous impressions and unfounded rumors may be corrected, we deem it proper that facts should be made known setting forth clearly and truthfully the situation. Therefore, we make the following explanation:

"The Montello Brick Works was organized under the laws of Pennsylvania. It leased the property of the Montello Brick Company, which had been previously organized. This property consists of a large brick plant at Montello, for which the Montello Brick Works agreed to pay an annual rental of \$63,000, being 6 per cent. on the \$1,050,000 of preferred and common stock of the Montello Brick Company. It also erected the fine plant at Wyomissing. The Montello Brick Works issued \$500,000 of preferred stock, the stockholders of the Montello Brick Company having a preference in making subscriptions, and \$1,000,000 of common stock, on which no dividend was to be paid until the preferred stockholders were paid their semi-annual dividends of 3 per centum. Five hundred thousand dollars was paid in actual cash for the preferred stock. The subscribers to preferred stock were given a bonus of one share of common stock for each share of preferred stock taken by them.

"The directors of the company being satisfied that Mr. Gery was the owner of valuable improvements and patents, and he having clearly demonstrated at his own expense, which was quite large, the great saving and improved quality of brick manufactured under his devices and burned in his patented kiln.,

IMPORTANT ACTION TAKEN IN CONVENTION AT EAST LIVERPOOL

East Liverpool, Ohio, July 13—Propositions to increase the wages of mold-makers five cents a day; pressers, casters, stickers-up, 15 per cent.; increasing the salary of President T. J. Duffy to \$1,600, and of Vice President Frank H. Hutchins of Trenton, N. J., to \$1,400, were prominent among the resolutions adopted by the National Brotherhood of Operative Potters, Friday.

The election of president and first vice president by a vote of the trade instead of by delegates in convention and the salary question are two propositions that will be referred to the trade before either became operative. An increase in the price of making certain pieces of ware was approved. The amounts vary from 10 to 25 per cent.

A resolution, having for its object the demand for an increase of ten per cent. in the pay of jiggermen and dish-makers, engaged at making white granite, was introduced. The same resolution contained a clause which places a ban upon C. C. ware in the future. The latter portion of the resolution was adopted and that which went before met defeat. Nearly the same regulations and prices at present govern the making of both classes of ware, and the adoption of the measure will not work any great hardship upon the manufacturer.

An effort was made to establish a "hard and fast" regulation in the kilnshed with regard to the carrying of ware from the green room. It was shown that the conditions in these departments of a great majority of the pottery plants are entirely satisfactory, and the resolution was rejected.

The employes of many of the larger pottery manufacturing concerns now enjoy a half holiday Saturday. A resolution was presented at the session today making the rule a general one, and also to require the firms to pay weekly at noon Saturday. A number of isolated companies pay their employes by check, and by the time the workers have had time to get to the banks the doors were closed. The resolution was adopted.

Mold makers who are called upon to block and case were supported in a resolution providing that an increase of wages be given them. The mold makers are now receiving \$3.50 day wages, and they will ask \$4.00. A measure went through providing for a figure of one-fourth cent for stamping ware.

The matter of forming a uniform price list for the making of china ware was left in the hands of the executive board, the members of which will take it up soon after the adjournment of the convention.

A demand to be made for increase in the pay of workmen producing plain edge ware. Plates are to be advanced one-half cent per dozen, while one-fourth cent will be demanded on saucers, fruits, and ice creams. The jiggermen will be benefitted if the demand is acceded to.

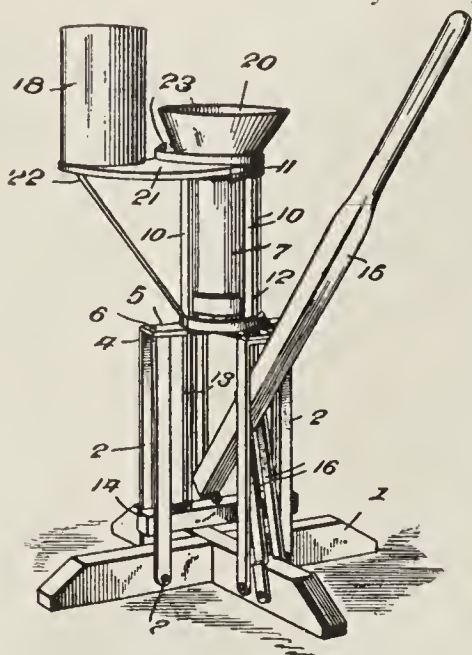
Dippers both east and west have been endeavoring for a long time to readjust the apprenticeship controversy in their trade. A resolution went through providing for an alteration. Under its regulations ten per cent. will be retained by the firm from the wages of all apprentices receiving \$3.50 per day for their first three years, the journeymen to receive the benefit.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

852,101. Tile-Machine. Loron O. Burnham, Clare, Mich. Filed June 22, 1906. Serial No. 322,933.

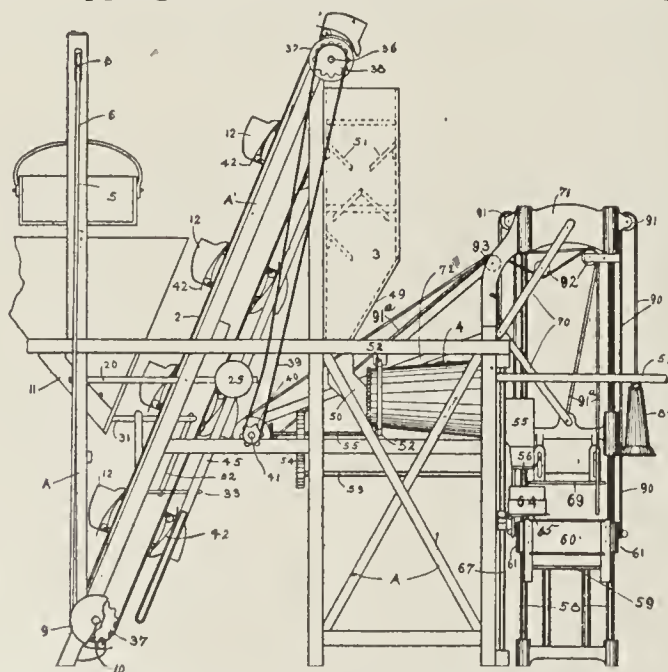
Claim—A machine of the class described comprising a base, standards on said base, an auxiliary base secured to said standards, a core on said auxiliary base, bars disposed



around said core and at a distance therefrom, means to secure said bars in position around said core, a shelf at the upper end of said bars, a hopper pivotally secured to said shelf, a casing between said bars and surrounding said core and means to elevate said casing whereby the plastic material may be removed from the core.

852,579. Block-Making Plant. Herbert G. Rounds, Bay City, Mich. Filed July 11, 1906. Serial No. 325,739.

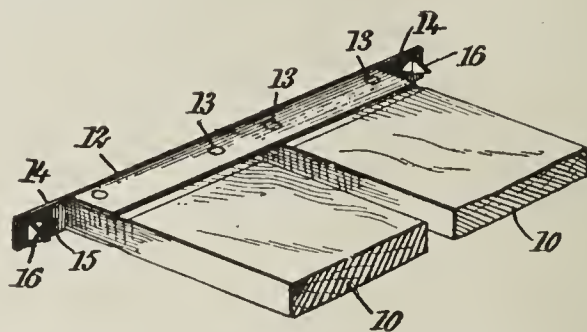
Claim—A block molding plant comprising a conveyor, a receptacle, a chute leading from the receptacle to a point adjacent the conveyor, gates in the chute controlling the passage of the contents of the receptacle to the conveyor, independent tripping mechanism connected to the gates, the



conveyor adapted to trip the mechanisms successively to receive a measured charge, a stationary mixer to which the material is conveyed and through which it passes in a dry state, a rotary mixer into which the material is discharged from the stationary mixer, a liquid discharging pipe leading into the rotary mixer, a swinging carrier into which the rotary mixer discharges, a suitably supported form into which the carrier discharges its contents and pressing mechanism actuated by the conveyor mechanism for compressing the material in the mold form.

853,086. Brick-Supporting Pallet. Bernard Jacquart, South River, N. J., assignor to American Enameled Brick & Tile Co., New York, N. Y., a Corporation of New York. Filed June 11, 1906. Serial No. 321,242.

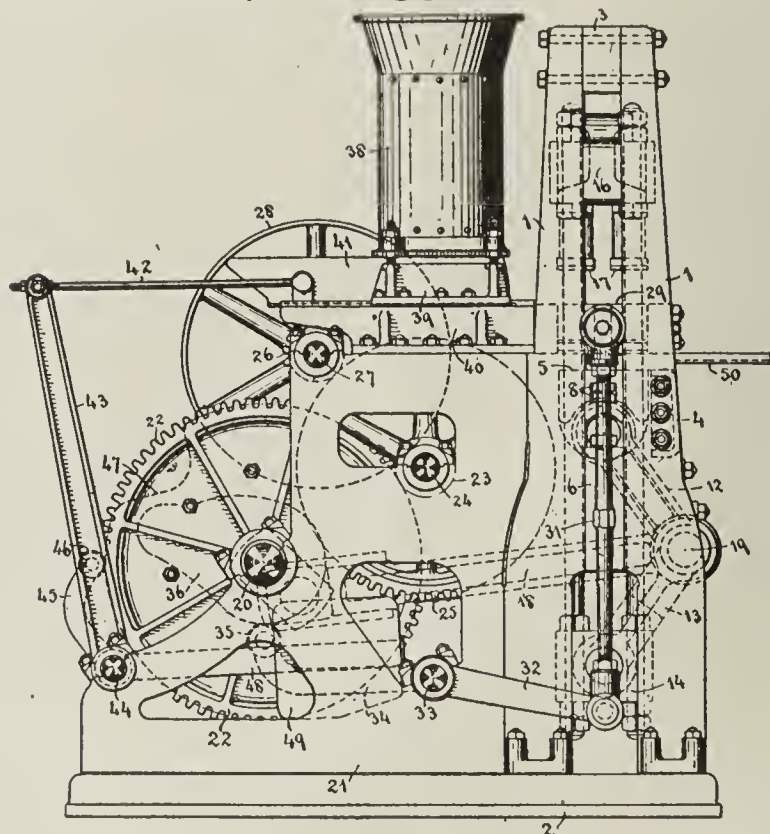
Claim—The combination of wooden boards provided with comparatively thin ends, and channel irons mounted upon said ends and secured thereto, said channel irons being provided with ear pieces, the latter being secured directly to the edges of said boards.



The combination of boards, and channel irons mounted thereupon and provided with oppositely disposed portions engaging oppositely disposed portions of said board, said channel irons being further provided with ear pieces and with projections extending laterally from the said ear pieces and engaging the edges of said board.

852,934. Brickmaking-Machine. Orvis G. Diefendorf, Watertown, N. Y. Filed July 14, 1906. Serial No. 326,250.

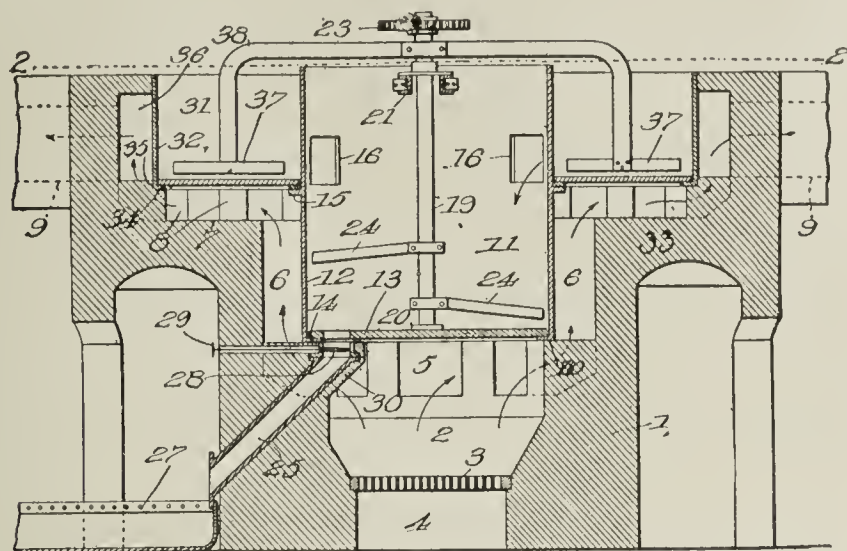
Claim—A machine of type described, comprising a mold and bottom and top plungers, in combination with means for operating the mold and plungers relatively to one another, whereby, after the bricks or blocks have been formed in the mold, they will be delivered from the bottom thereof, means whereby a pallet, or other conveying device, may be inserted below the mold after separation is effected between the mold and the bottom plunger, and means for causing the pallet or other conveyor, to contact with the contents of the mold as they begin to issue therefrom and to maintain said contact while delivery is taking place.



In the machine of the type described, the combination with a movable mold and a reciprocating cross-head carrying one or more top plungers, said mold and cross-head being guided at each end in guide-ways provided therefor in upright standards, of a cross-block carrying one or more stationary bottom plungers positioned below the mold and having its ends slidably mounted in said guide-ways, adjusting screws rising from the standards below the cross-block and engaging the ends thereof, whereby the cross-block may be

raised and lowered and rigidly fastened in order to properly position the bottom plunger or plungers with relation to the mold, a toggle hung from the under side of said cross-block, connections between said toggle and the reciprocating cross-head and means for imparting motion to the toggle and to the mold substantially as herein set forth.

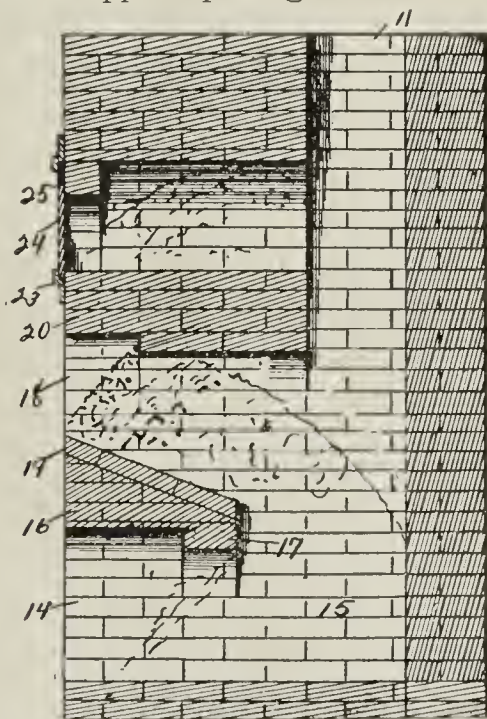
852,616. Gypsum-Burning Kiln. Friedrich Raithel, Windsheim, Germany. Filed Dec. 15, 1906. Serial No. 347,974.



Claim—A gypsum burning-kiln, characterized by the kiln being constituted by two heaters, of which the main heater arranged directly over the combustion chamber is deeper than the other or auxiliary heater and passes through the latter in such manner that the auxiliary heater with which the escaping combustion gases come into contact, forms an annular chamber round the main heater.

853,130. Fire-Box for Kilns. John F. Slater, Avoca, Iowa. Filed Sept. 5, 1906. Serial No. 333,722.

Claim—An improved fire-box for kilns, comprising inclosing walls forming a combustion chamber, a flue communicating therewith, said chamber having at its front an upper and lower opening and having between said openings a solid platform inclined downwardly and rearwardly from the bottom of the upper opening.

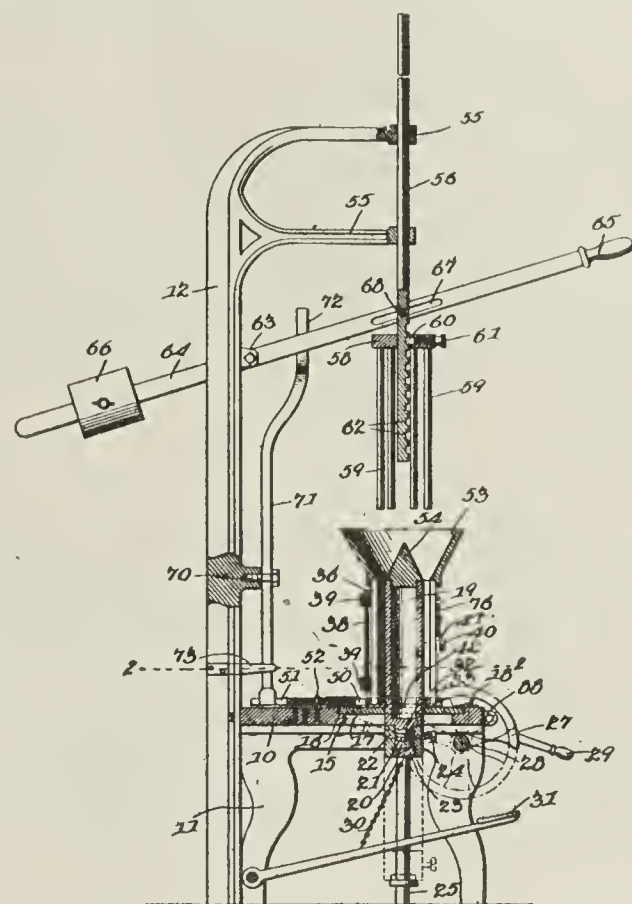


In the fire-box for kilns, the combination of inclosing walls forming a combustion chamber having a fuel opening at its front and an ash pit opening at its front below the fuel opening, an arch above the ash pit opening, extending to a point near the center of the combustion chamber, a solid brick platform extending from the bottom of the fuel opening downward and rearwardly and supported by said arch, an arch above the fuel opening, extending rearwardly above the combustion chamber further than the said inclined platform, and a supplemental arch projecting below said latter arch with its front edge above the central portion of the

inclined platform, and a flue communicating with the combustion chamber.

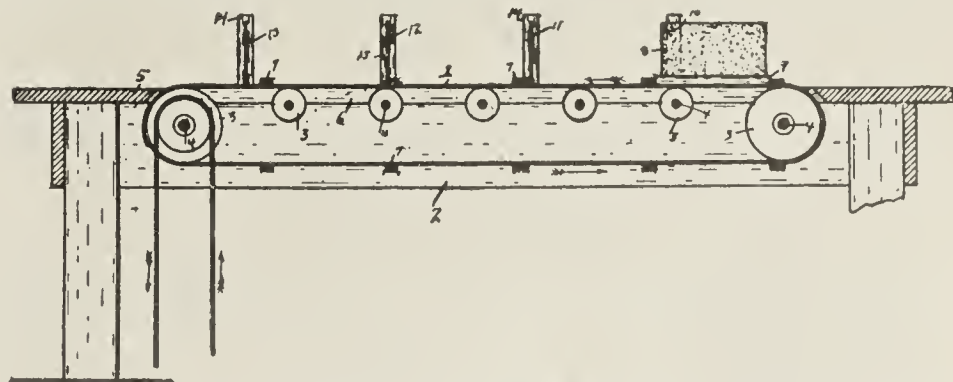
852,839. Machine for Molding Plastic Material. Henry H. Howell, Hope, Ark., assignor of one fifth to William C. Wilson, Brice, Ohio. Filed July 19, 1906. Serial No. 326,900.

Claim—The combination with a mold box, of a reciprocating tamping member, a manually operable actuating lever therefore, the lever having a variable stroke governed by the quantity of material in the mold box, and the force of the tamping below, and means actuated by said lever for imparting to the mold box a step by step rotative movement proportioned to the stroke of the lever.



In combination, a table having an opening for the passage of a core, a mold box supported on the table, a core carrying bar, a core mounted thereon, means for guiding the bar, a pedal connected to the bar, a shaft, means for supporting the same, a pair of lifting segments carried by the shaft, and flexible connections between said segments and the bar.

854,823. Process of Manufacturing Roofing-Tiles. Richard Hedrich, Milwaukee, Wis., assignor to Martha Hedrich, Milwaukee, Wis. Filed Aug. 20, 1906. Serial No. 331,252.



Claim—The process herein described of manufacturing roofing tiles consisting first, in forming plastic clay into blocks, the vertical sides and ends of which conform in shape to the desired shape of the sides and ends of the tiles when made; second, severing such blocks transversely to the vertical sides and ends into a plurality of thin pieces by a plurality of cuts and permitting the pieces thus formed to fall back upon each other leaving the general contour of the severed blocks unchanged; third, removing the several pieces thus formed with their relative position undisturbed and drying and firing the same in a suitable kiln together; and fourth, separating the several pieces thus formed from each other.

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No. 1

"I like to read American advertisements. They are to themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

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Your shadow and your flannels may shrink, but your debts never.

Most of a man's troubles are ahead of him and travel so fast that he never catches up with it.

Many a man has been forced to ask for a handout because he was unable to get his hand in.

Remember, young man, if you are not satisfied with your job, the chances are that the boss will not refuse to accept your resignation.

One reason why so much has been accomplished during the past one hundred years is that the men who have done the accomplishing wasted no time doing up their hair.

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BUILDING OPERATIONS FOR JUNE

Official building reports from some fifty of the leading cities of the country, received by the American Contractor, Chicago, and tabulated; show in the aggregate value of building permits granted in June, 1907, as compared with those for the corresponding month of last year, very nearly equal, the losses slightly predominating. Some cities show astonishing gains and others equally remarkable losses. This is largely due to the issuance of large single permits during June, 1906. For the most part the construction business of the country is moving forward in an orderly, conservative and highly satisfactory manner, the total reported loss being a very small fraction of one per cent. When the immense amount of building done last year is taken into account, this must be regarded as indicating that our present large operations are quite normal and may well be expected to continue since the freely predicted reaction has not materialized. The following figures show the percentage of gains in leading cities: Birmingham, 68; Bridgeport, 76; Chicago, 9; Chattanooga, 214; Denver, 7; Detroit, 58; Evansville, 57; Harrisburg, 41; Indianapolis, 124; Louisville, 17; Minneapolis, 45; Nashville, 37; Omaha, 18; Pittsburg, 11; Spokane, 442; Salt Lake City, 667; Topeka, 167; Tacoma, 104; Washington, 13. Losses are indicated by the following figures: Buffalo, 34; Cleveland, 16; Dallas, 33; Duluth, 39; Grand Rapids, 36; Hartford, 9; Kansas City, 46; Los Angeles, 36; Milwaukee, 47; Mobile, 73; New Haven, 39; Newark, 10; Greater New York, 9; Philadelphia, 11; St. Louis, 33; St. Paul, 29; Syracuse, 34; Toledo, 9. A gain of 9 per cent. in Chicago and a loss of only 9 per cent. in New York shows the great regularity of building operations.

SAND-LIME BRICK

The manufacture of sand-lime brick is rapidly becoming an important industry in the United States and is likely to be as profitable here as it has been in Germany for the last ten years.

A sand-lime brick is essentially a mass of sand cemented by hydrous lime silicates. The bricks can easily be made with a crushing strength of over 4,000 pounds per square inch, exceeding in this respect some sandstones, and a tensile strength of over 200 pounds per square inch, and they withstand severe freezing, thawing, and fire tests. When made with pure sand their color is white, but by the addition of manganese or graphite in varying proportions, gray or pink brick may be produced. Both common and front bricks are made. Their chief merits seem to be their white color and their somewhat lower cost of manufacture than that of clay or shale bricks used for building fronts and for ornamental purposes. It is claimed that they make rigid structures and that they are in every way safe and satisfactory as building material.

A brick plant for making sand-lime bricks, near Sayreton, a village just north of Birmingham, Ala., is briefly described in a paper by Charles Butts in the annual economic bulletin (No. 315) of the United States Geological Survey for the year 1906. The paper includes a list of publications dealing with the subject of sand-lime bricks.—U. S. Geological Survey Bulletin 290.

OBITUARY

G. F. Sperry, owner and manager of the Ludington, (Mich.) Brick works, died suddenly of heart disease. He was 50 years of age, a Mason and highly respected citizen and is survived by a widow.

John Mills, Jr., aged 66 years, formerly a well known brick contractor of the east end, Pittsburg, Pa., died. His death was due to the infirmities of age. His father was for many years engaged in the manufacture of brick and the son learned his trade.

FIRE! FIRE! FIRE!

The Corse Brick Works at Saugerties, N. Y., were badly damaged by fire.

The Algona (Iowa) Brick & Tile works was damaged to the extent of \$2,000 by fire. No insurance.

The brick plant of John M. Kennedy, Ontario and C streets, Philadelphia, Pa., was damaged by fire to the extent of \$1,000.

A \$10,000 loss by fire was caused at the plant of the Versailles Fire Brick works at Versailles, Mo. The plant will be rebuilt at once.

Four buildings of S. A. Barnes & Co., brick works at Rochester, Pa., were destroyed by fire causing a loss of \$30,000, partly insured.

The plant of the Bond Sandstone Brick Co., Lake Helen, Fla., was damaged to the extent of \$8,000 by fire. Rebuilding will be commenced at once.

The plant of the Rochester (N. Y.) Composite Brick Co. was completely destroyed by fire causing a loss of \$50,000, which is covered by insurance.

The plant of the Richlands (Va.) Brick Co., was destroyed by fire causing a loss of \$25,000. \$4,000 insurance. Fire started in the engine room.

The Kempff Shale Brick Co.'s works at Thirty-first and Wyoming streets, Kansas City, Mo., was damaged by fire to the extent of several thousand dollars.

BRICK CHEAPER IN CHICAGO

Chicago, July 12.—The price of brick in Chicago has eased off considerably during the past fortnight, although it is stated that the manufacturers are not in any danger of experiencing a repetition of last year's ruinous competitive war. The present uneasiness is due to two causes, the customary midsummer letup in demand and the fact that all the brick-making plants are running.

The shortage of brick which existed in the spring, when prices were advanced to \$7 a 1,000 and a premium was being paid for spot delivery, has been eliminated, and there is now a surplus. Manufacturers still are quoting the market for common brick at \$7, but sales are being made as low as \$6. The latter price is the minimum, however, and there seems to be an understanding that it shall not go below that figure, although the producers deny the existence of an alliance.

It is expected prices will move upward rather than the contrary. The fall season is near and the prospects are for increased consumption. All the brick-making concerns will earn satisfactory returns on their capitalization this year, but it will require a large portion of these proceeds to recoup the losses of 1906.

ACCIDENTS, DAMAGES AND LOSSES

Charles Carey, a boy working in a brick yard at Utica, Ill., was caught in the machinery and instantly killed.

Mike Bolick, an employe of the Robinson Clay Products Co., Akron, O., had his arm crushed off in a clay pit.

A bill in equity has been filed against the Hall Pressed Brick Co., Duquense, Pa., and H. C. Miller has been appointed receiver.

William McClintock, superintendent of the terra cotta factory at Elsinore, Cal., was drawn into a machine and seriously injured.

All McCord, an employe of the Nebraska City (Neb.) Brick Co. plant was struck by a broken belt and injured badly. He will recover.

The paymaster of the Excelsior Terra Cotta Co., New Brunswick, N. J., was held up but the pay-day was changed and the robbers got left.

The Des Moines river has broken all records for high water, brick plants along its banks have suffered great damage from Boone to Des Moines.

C. Droppa, who runs the dry pan at the plant of the Streator (Ill.) Paving Brick Co., had his leg broken by a chunk of clay falling upon same.

A petition has been filed to have Ben M. Holland of Moline, Ill., a brick manufacturer, declared a bankrupt. The claims against him approximate \$10,000.

Fred Jaquay, a boy, met a horrible death in the East Brookfield, Mass., plant of the New England Brick Co., by being knocked from the team he was driving into a mixer.

Alderman Arthur Laubaugh of Hastings, Mich., was arrested for receiving stolen property and selling for junk the burners of the Zeeland Brick Co.'s plant at Cloverdale.

Robert Todd, a laborer at the plant of the Standard Vitri-fied Brick Co., Coffeyville, Kansas, was caught in a cave-in in the clay pit and one leg was broken and otherwise injured.

F. S. Bachus, managing owner of the Gifford (Idaho) Brick Co., fell 22 feet into a cistern and received a crushed and broken leg. The bones were driven entirely through the foot.

SHORTAGE IN PAVING BRICK PARTLY DUE TO INABILITY TO GET MEN TO HANDLE THEM

Edward Rodgers of the Alton (Ills.) Paving and Building Brick Co. says that his plant is being handicapped by scarcity of labor. The supply of paving brick is being cut short necessarily because of trouble in getting them out after they are made. The plant is running only one-half its capacity most of the time and occasionally it becomes necessary to shut down until the accumulated bricks can be got out of the way. With plenty of labor there would be no brick shortage as the plant has a capacity for furnishing all that are needed.

The East Alton tile works is suffering from a similar trouble. John Koch, head of the tile works, said that labor is so scarce the plant can hardly be kept going and is running about half capacity.

THE ARKANSAS COMPANY WILL GET ITS MEN

The board of commissioners of the state penitentiary held a special session for the purpose of taking action upon the resolution adopted at the previous meeting of the board when it was resolved to carry out the provisions of the Arkansas Brick and Manufacturing Company's contract, known as the Dickinson contract. According to the company's contract it is entitled to 300 convicts, which number it has never received, according to its claim. The object of the meeting was to consider this claim and the result was that a resolution was adopted instructing the superintendent to furnish the men in accordance with the contract.

The resolution was opposed by Attorney General Kirby and Auditor Moore, and it was not until after a spirited discussion that it was adopted. Attorney General Kirby held that the amount received from the contracting company was insufficient to pay for the maintenance of the convicts and that the state had to pay for their maintenance and had to wait from one to three months to get its expense money back.

The resolution that provoked the discussion was as follows:

"Whereas, The state of Arkansas by its contract, dated July 31, 1899, agrees to furnish to the Arkansas Brick and Manufacturing Company the labor of 300 able-bodied convicts per day for a period specified therein; and

"Whereas, Said company has complained to the board that the full amount of labor called for by the contract is not being furnished to it by the superintendent of the Arkansas penitentiary; therefore, be it

"Resolved, By the board of Commissioners of the state penitentiary that said superintendent be and is hereby authorized to furnish to said company the labor of 300 able-bodied convicts per day as required by said contract."

To this resolution Attorney General Kirby offered the following substitute:

"Resolved, That only such men as are sent to the penitentiary from the courts and as they can be spared from the farm and as they can be spared from the Reaves contract be now furnished on the Arkansas Brick and Manufacturing Company's contract."

RINGLINGS LET A BRICK CONTRACT

Col. A. G. Ringling, manager of the circus to locate winter quarters two miles south of Collinsville, I. T., has closed a contract with the Collinsville Brick and Tile company, for two and a quarter million brick to be used in the construction of their buildings. The contract provides for a half million brick to be on the ground not later than September 5, and the entire amount to be ready for use on or before November 1.

William J. Pattison has agreed with the brick and tile company to haul the brick and has given a bond in the sum of \$10,000 that he will carry out the contract.

Judge G. W. McClelland, manager of the brick company, said that Ringling brothers would probably use in the neighborhood of five million brick before their immense winter quarters reached completion.

POTTERS AGREE TO COOPERS' DEMANDS

William Burgess has returned to Trenton, N. J., from the summer meeting of the United States Potters' Association, which was held in Pittsburg. During the convention Mr. Burgess made a detailed report of the war he has waged against importers, and when he was through the convention unanimously endorsed all he has done. He was highly complimented on his conduct of the many intricate details of the prosecution which resulted in a victory for the American manufacturers.

Labor matters were not formally discussed at the meeting but an informal consideration of them showed that generally the labor situation in the pottery industry is satisfactory between the men and employers. It was the general impression at the meeting that the executive committee of the association and the labor bodies are understanding each other better at this time than ever before.

The matter of advanced prices of packing cases sold to potters by coopers for shipments of ware was discussed and it was concluded that the increases of the coopers in the West are justified by the increased cost of the materials. It was decided by the potters to continue to get their cases from the coopers, instead of establishing cooperage plants in connection with the potteries.

To meet the increased cost of the cases the convention passed a resolution advancing the price of packed cases just enough to cover the increase.

BIG ORDERS ARE SECURED BY TWO COMPANIES

The Pittsburg-Buffalo Co. next week complete an order for 3,000,000 brick for the Carnegie Steel Co. used in the erection of two blast furnaces at Rankin. The company has booked the following orders: For Greensburg, 1,500,000; Meadville, 1,000,000; Oakmont, 500,000; Clarion, 500,000; Canonsburg, 750,000. In addition, the company is filling orders in Boston, New York, Philadelphia and other eastern cities aggregating fully 5,000,000 brick.

The sewer pipe and brick plants of the Pittsburg-Buffalo Co. are being operated to capacity and will be kept running steadily through the winter. There is a stock on the yards of more than 5,000,000 brick, and about 60,000 brick is being turned out daily.

One of the largest contracts for fire brick ever placed in the Pittsburg district was awarded to the Pennsylvania Clay Co., Fallston, Pa. The contract was given by the Jones & Laughlin Steel Co. and calls for 1,700,000 wire-cut brick for building purposes.

ALL BRICK LOOKS ALIKE TO LANE

Commissioner Lane of the interstate commerce commission has just published a ruling of the commission in regard to complaints against the Pennsylvania and Baltimore & Ohio for brick shipments from eastern Ohio to New York and eastern points. Mr. Lane says there must be no distinction between the three classes of brick turned out from one kiln and so nearly alike as to need an expert to tell the difference. All must be hauled under the same rate.

20 RICH LUMBERMEN IN TRUST SENT TO JAIL

Toledo, O., July 12.—The convicted members of the Toledo brick and lumber trusts were called into court today before Judge Morris and sentenced. The brick men by pleading guilty to but one section of the anti-trust law, were fined \$1,000, while the lumber men were given six months in the workhouse.

The brick dealers who were fined \$1,000 each are:

Lawrence Burkhardt,	Adam R. Kuhlman,
Albert E. Macomber,	William J. Spear,
Richard W. Clarke,	R. E.-Kellar,
Frank Gorman,	Frank E. Tracey.
Wm. A. Howell,	

The lumber dealers who got six months each are:

Marcus V. Barbour,	Frederick E. Witker,
Geo. W. Campbell,	William F. Witker,
Jas. H. Campbell,	Edward E. Arsnamm,
Geo. L. Freeman,	Charles G. Bremer,
Reuben Kimball,	Edward J. Goulett,
Hiram R. Kelsey,	Frederick C. Hahn,
Clarence H. Packer,	Charles W. Harris,
John H. Puck,	Eben D. Hopkinson,
Rowland Starr,	J. A. Van Karsten,
David Trotter,	Ed. E. Washburn.

JENNIE M. STROBIL CLAIMS \$36,000 FROM ESTATE OF LATE AMOS T. GRIFFIN OF UTICA

"I conducted his business and helped him make his fortune, and I believe that I am entitled to share in the profits." is the sum and substance of Miss Jennie M. Strobil's reason for claiming \$36,000 from the estate of Amos T. Griffin, a former wealthy brick manufacturer of Utica, Ill., who maintained an office at Canal and Sixteenth streets.

The case is one of the most peculiar on record. Not a single witness so far heard has had any reflection on the habits of the decedent and the plaintiff. Even Ernest V. Johnson, executor of the estate and legal defender of the suit, says nothing more unkind than that checks were procured "by fraud and under undue pressure," and that he only seeks to be convinced that "value received" was given for the face of the checks.

In addition to her work at the office, Miss Strobil avers that she nursed Griffin through many illnesses and that he was compelled to quit his home because it was made unpleasant for him. All that the plaintiff was permitted to testify to was that Griffin gave her one blank check on the Corn Exchange National bank when he knew he was going to die and instructed her to ascertain his balance in the bank and fill in the check for that amount. She did so for \$2,274. Several witnesses corroborated her allegations.

FULTON BRICK MAKERS BUILD MAMMOTH TANK

Powers Bros. & Maynard, brick manufacturers, whose plant is just below Fulton, Va., have completed a mammoth concrete tank guaranteed to hold 100,000 gallons of water. This reservoir is for the purpose of furnishing water to the plant in dry spells. It is said to be the largest tank in the state.

PAYMASTER HELD UP ON THE WRONG DAY

New Brunswick, N. J.—Three masked and armed highwaymen held up the paymaster of the Excelsior Terra Cotta Company while he was driving from the Rocky Hill Railroad station to the company's plant, a half mile distant, today, but did not get anything.

Tuesday is the regular pay day at the plant. For some unexplained purpose, pay day was changed this week to Friday, and the paymaster did not have the \$10,000 which he usually carries with him.

As he was driving along a lonely stretch of road three men jumped in front of the horse, and covered the paymaster and driver with their guns. The paymaster permitted the men to search the carriage. Then they fled.

IDEAL CONCRET MACHINERY COMPANY AGAIN ENLARGES

The Ideal Concrete Machinery Co., of South Bend, Ind., have completed a deal for the purchase of the plant, business, patents, stock and good-will of the White Cement Machinery Co., of Jackson, Mich., thereby bringing into the "Ideal" family a number of machines that makes the line wonderfully complete, and will doubtless result in practical control of the concrete machine industry.

The simplicity and other merits of the former "White" machines for the manufacture of cement sills, steps, sidewalks and posts, has made them famous for years among concrete block makers and contractors in all parts of the United States. These features appealed particularly to the Ideal Concrete Machinery Co., realizing as they did, that the addition of the "White" machines would make the Ideal line complete, universal and invincible.

The former "White" machines will hereafter be manufactured with the Ideal machines, and will be known as the Ideal Sill, Side-Walk, Step and Post Mold. The recently enlarged manufacturing capacity of the Ideal Concrete Machinery Co. places them in position to handle this increased volume of business without delay, and orders for the new Ideal machines will be filled as fast as received.

An elaborate catalogue has recently been issued by the Ideal Concrete Machinery Co., which to all intents and purposes is an encyclopedia on concrete block manufacture. It is sent free on application, and will prove interesting and valuable to builder and manufacturer alike.

ARKANSAS BRICK MAKERS MEET

A meeting of the Brickmakers' Association of Arkansas was held in the rooms of the Builders' League, corner of Third and Main streets, Little Rock, at which some routine business was transacted and officers for the ensuing year elected. Several out-of-town brick manufacturers were present.

The election of officers resulted as follows: A. Brewster of Pine Bluff, president; T. T. Cotnam of Little Rock, vice president; C. E. Taylor of Little Rock, secretary and treasurer. A. Brewster is president of the Pine Bluff Brick Company. T. T. Cotnam is with the Little Rock Granite and Brick Works, and C. E. Taylor is with the Arkansas Brick and Manufacturing Company of this city.

The meeting adjourned subject to call of the president.

SAND OR LIME BRICK OR BLOCK NEWS

Elkins & Norris, Richford, Vt., are manufacturing cement brick and tile.

The Kiel Cement Brick Co., Kiel, Wis., is now making cement blocks for a silo.

Stein-Williams Brick Co., Niles, O., has begun operations in their brick plant.

Louis Schmidt, Grand Island, Neb., is manufacturing a fine cement brick as well as clay brick.

Sidney Smart has installed a compressed brick plant at Milfort Lake, with a capacity of 5,000 brick.

Frank Tildon of Vernon, Mich., has purchased an improved cement brick machine and is now operating same.

Hutchinson, Kansas, is to have a sand lime brick plant, the sand being taken from the river. Col. L. A. Beebe can be addressed.

The manufacture of cement brick at Pulaski, N. Y., will soon be extensively engaged in by J. G. Mahaffy and Charles C. Clark.

Thomas Wilson and George Foothold, Wilkesbarre, Pa., are interested in a plant for the manufacture of cement brick for facing purposes.

The new cement brick plant at Natick, Mass., is quite an accession to Natick. They have three buildings and are negotiating for land for more.

The J. E. Bartlett Co., Jackson, Mich., has secured the contract to furnish 700,000 sand-lime brick for the binder plant at the Michigan State Prison.

The Watertown (S. Dak.) Pressed Brick Co. has resumed operations after a month's shut down resulting from the burning of a portion of the plant.

E. Schmitt, Logansport, Ind., who has been selling stock in the proposed sand-lime brick plant expects to soon have enough stock sold to start the factory.

The Cement & Concrete Co., of Woodward, Okla., has been incorporated with \$10,000 capital stock by S. B. Laune, E. P. Burdick and A. Van Pelt.

Wm. Murray, Sanford, Fla., has started a factory for the manufacture of drain tile out of cement and sand. Another factory will soon be started by J. E. Pace and J. B. Randall.

The Electric City Brick Co., Schenectady, N. Y., has been incorporated with \$25,000. Incorporators are Fred N. Stevens, James M. Carpenter and George S. McKearie, of Hoosick Falls, N. Y.

The employees of the Jackson & Church Co., The Jackson, Church & Wilcox Co., and the Saginaw Sandstone Brick Co., all of Saginaw, Mich., recently went on an excursion to Bay Port, 2,000 people participating.

The San Antonio (Texas) Brick Company has been organized and will manufacture sand-lime brick by the middle of September. The officers are: Geo. H. Craft, president; D. B. Sanders, secretary; J. M. Bennett, Jr., treasurer.

The Sandstone Brick & Lime Co., Seattle, Wash., has been reorganized with \$100,000 capital stock. A sand-lime brick plant will be erected at once that will cost \$75,000. The officers are: H. R. Rustad, president; Jonas Bushell, vice president; G. S. Hastings, secretary; A. G. Keene, treasurer, and M. F. Shaw, manager.

MISCELLANEOUS ITEMS

Grand Rapids, Minn., is promised a large brick works.

A company is forming at San Angelo, Texas, with \$15,000 capital stock to manufacture brick.

The Mohawk (Tenn.) Sewer Pipe Co. has been chartered and will operate at Mohawk and Jefferson City.

J. L. Mahand, of Omaha, Neb., is considering the building of a large shale brick plant at Fort Smith, Ark.

The Federal Brick & Clay Co. are removing the plant at Pond Creek to another plant of the company in New Jersey.

The Marquette (Kansas) Salt & Brick Co. are gathering estimates on the cost of installing a brick plant at that place.

The Fitchburg (Mass.) Brick Co. has now made its first brick since they remodeled the yard. The plant is operated by electricity.

The new plant of the Jacobs Brick Co. at Berlin, Ct., has been started up. M. E. Jacobs is the president and Leon LeClair is secretary and treasurer.

The Tyler Brick & Tile Co., Middlebourne, W. Va., has been incorporated with \$10,000 capital stock. The stockholders are J. E. Grin, D. Hickman, J. E. Sellers and others.

The Penn Vitrified Brick Co., Cameron, Pa., has been incorporated with \$500,000 capital stock. Incorporators are H. G. Walker, E. N. Walker, C. H. McCutcheon and W. H. Kinck.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., have just shipped one of their modern 9-ft. Dry Cans to the East Windsor Brick Works, East Windsor Hill, Connecticut.

The Owensboro (Ky.) Tile and Sewer Pipe Co. are erecting a building 300x65 feet, three stories high and are equipping it with sewer pipe machinery; also building the necessary kilns for the plant.

Victor Cushwa & Sons, of Williamsport, Md., owners of the Conococheaque Brick & Earthenware Co., have installed new and modern machinery and with new methods are now producing fine pressed and ornamental brick.

F. E. Hind, Supt. of Construction of the Federal Prison at Leavenworth, Kansas, has held a conference with W. S. Sames, architect of the prison at St. Louis, Mo., and examined the revised bids on the enlarging of the prison brick plant.

Mr. S. E. Ream, Aldan, Delaware Co., Pa., has placed his order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a soft mud equipment for the manufacture of brick, and which outfit is to be installed at Ephata, Pa.

The E. K. Ramsey Co., Penn Yan, N. Y., has been incorporated with \$50,000 capital stock to manufacture ceramic products. The directors are E. K. Ramsey, of Penn Yan, Albert H. Trotter, of Brooklyn, and Samuel J. Katzberg, of Sanarsis, R. I.

The Latonia Brick Co., Latonia, Ky., are equipping an up-to-date modern brick plant including "Martin" Latest Improved Brick Machinery with the "Martin" Patent Rack Pipe Steam Brick Dryer System, of 40,000 daily capacity, it being installed by the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa.

The J. M. Ivie & Sons' plant at Kirksville, Mo., will manufacture paving brick.

A government sea-wall at Galveston, Texas, is to be built that will cost \$750,000, and a driveway paved with vitrified brick is to be made.

A. J. Swanson & Co., Lindsborg, Kansas, is making extensive improvements to the plant near Fremont. Several new kilns will be added.

The Kiesel Brick Co., Rochester, N. H., whose plant was burned by fire recently has completed its new factory. William F. Turner is superintendent.

The Northern Pressed Brick Co., Crookston, Minn., has installed a cable conveyor that carries the brick from the moulding table to the racks, doing away with much manual labor.

Cutshall & Flagg, Brazil, Ind., have been awarded the contract to erect at Streator, Ill., the \$80,000 drain tile plant for the National Drain Tile Co., of Terre Haute. The work has been started on same.

The National Brick Co., Chicago, retired \$20,000 of its first mortgage bonds on July 1st in accordance with the terms of the sinking fund. The National Company is now operating all four of its plants.

John Hookers, who operates a brick yard at DePere, Wis., on the east side has decided to go into the business on a larger scale, has bought 56 acres of clay land on the west side of Fox River at West DePere. It is the brick yard property formerly run by Eugene Smith.

The proposed brick plant for McDade, Texas, is still hanging fire with good chances of being carried through.

The Nelson Brick Co., Mound Valley, Kansas, brought in a 4,000,000 gasser two miles north of town at a depth of 750 feet.

Another large brick making plant is to be built at Alton, Ill., on the north side. James Wilson is one of the promoters.

The A. J. Hunter Brick Works at Grand Forks, N. D., is to be moved from its present location to near the Red River Valley Brick Co.'s plant.

Chrissinger & Strain, Mt. Pleasant, Iowa, have their new plant on Monroe street ready for business and the plant's capacity will be taxed to supply the demand.

The Adams Brick Co.'s plant at Alexandria, La., has been started again after a 43 days' layoff on account of the clay lands being overflowed by the Red River.

The Modesto (Cal.) Pressed Brick Co. has filed articles of incorporation with \$20,000 capital stock. The incorporators are J. W. Craycroft, T. K. Beard, T. J. Wisecarver, B. J. Smith, and others.

The Pittsburg (Pa.) Silicia & Brick Co. has been incorporated with \$20,000 capital stock. Directors are John M. Henry of Bridgeville; Frank R. Schneider of Crafton, and Oswald Ende of Carnegie.

The Independent Press Brick & Tile Co., Dallas, Texas, has been incorporated with \$500,000 capital stock. Incorporators are John R. Lyon, Geo. F. Burbank, W. A. Yoakum, C. S. Conrad and C. C. Warfield.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

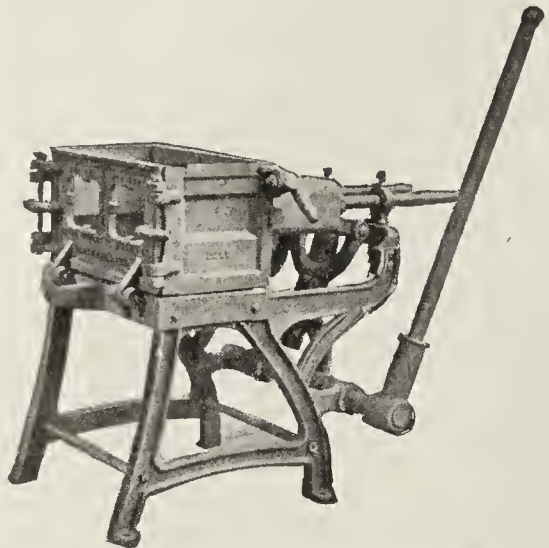
Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

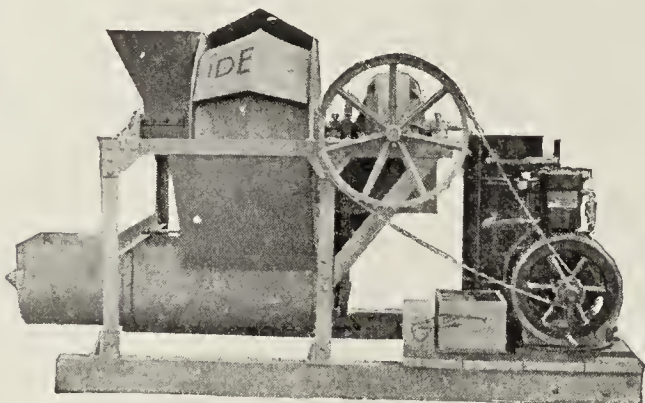
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



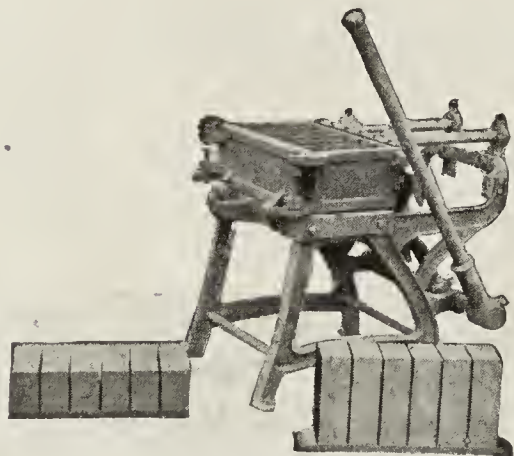
WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.



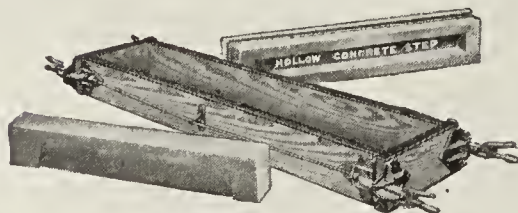
Model A--Ideal Concrete Block Machine



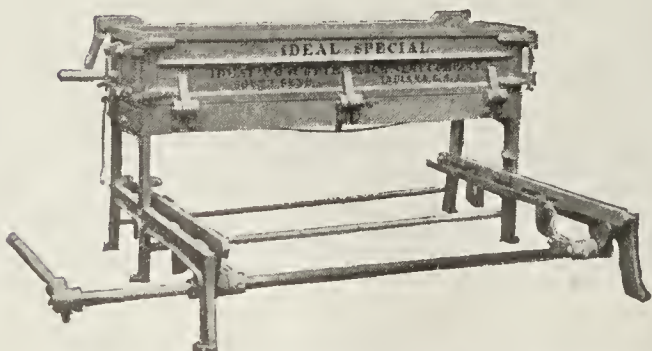
Ideal Concrete Mixer



Ideal Concrete Brick Machine



Ideal Cement Sill Mould



Ideal Special Sill and Lintel Machine

IDEAL CONCRETE MACHINERY CO.

Manufacturers of

["Ideal" Concrete Machinery]

Block Machines, 16 to 24 in. lengths
(Interchangeable)

Brick Machines, Mixers

Sill and Lintel Machines

Pier and Column Moulds

Step, Sidewalk and Sill Moulds

Ornamental Moulds for
Shafts, Capitals, Vases, etc.

Largest exclusive manufacturers of Concrete Machinery in the world. Originators of the "down face" horizontal core concrete Block Machine: Model "A," 16 inch; Model "E," 24 inch. Machines are interchangeable to 8, 10 or 12 inch widths, and produce whole or solid blocks in full or fractional sizes, within capacity.

Manufacturers of the IDEAL Sill and Lintel Machine, IDEAL Continuous Batch Mixer, IDEAL Cement Brick Machine, IDEAL Sill and Cap Molds, IDEAL Cement Step Molds, IDEAL Sidewalk Molds, IDEAL Ornamental Column Molds with Ionic or Doric Capitals, IDEAL Ornamental Spindle Molds, Porch Column Block Molds, Concrete Lawn Vases, Fancy Belt Courses, Ornamental Caps, Ornamental Ball Molds, and everything in regular and special designs.

More than *two thousand* of our Block Machines alone are being operated in the United States. Exclusively used by all up-to-date manufacturing plants. Importing houses of reputation and reliability are "IDEAL" agents in every country on earth. Largest exporters of concrete block machinery in the United States.

Write for Catalogue. Magnificently illustrated: Shows gross and net weights of all machinery and supplies; gives weights and cubic measurements of materials. Tells how to make exact calculations of cost of manufacture of Ideal Concrete Blocks in any locality. The most comprehensive encyclopedia on concrete machinery and its allied interests ever published. Sent free on application.

Ideal Concrete Machinery Co.

Dep't W

South Bend, Indiana, U. S. A.

Mussens Limited, Montreal, Canada Sole Agents for Canada

The Packerton (Ind.) Tile Co., has been perfected and Isaac Simison is in charge.

The National Fire Proofing Co. has declared its usual quarterly dividend of 1 per cent on its preferred stock, payable July 15th.

The Carlisle Paving Brick Co.'s works at Portsmouth, O., is building an extensive wall around its works to protect them from floods.

O. H. DeLamberton proposes to establish at Callahan, Fla., in connection with his industrial college a brick and drain tile factory.

The Manteno (Ill.) Brick Co. has landed a contract to furnish 3,000,000 brick for the Wisconsin State capitol building at Madison.

The Calumet Brick Co., of Chicago, has bought more land and will enlarge their brick plant. The company is owned by Charles Alsip.

McPherson & Jarvis, Chewalah, Wash., have bought modern machinery for the manufacture of brick from the J. D. Fate Co., of Plymouth, Ohio.

The brick plant at Plaquemine, La., has been bought by Adonis Schnebelin, B. C. LeBlanc and L. P. Barrow and will be operated as David Altemus & Co.

Arrangements have been completed for the building of the Elsmore (Kans.) Brick Works. A site has been chosen where there is plenty of gas and a lake of water.

Chas. L. Snyder, who has been superintendent of the Humboldt (Nebr.) Brick Works since it started, has resigned and accepted a similar position at Havensville, Kansas.

I. S. Finkle has started the Anson Brick Works at Marshall town, Ia., which has been idle for some time. The old machinery has been overhauled and some new machinery added.

C. T. H. Benton, manager of Mt. Zion Land Syndicate, Peoria, Ill., contemplates building a brick plant at the proposed Mt. Zion, which is to be located on the Illinois River, north of Peoria.

The Oliver Silicia Sand Co., Warwick, Ohio, has been incorporated with \$25,000 capital stock. Incorporators are James F. Parks, Edward Oliver, J. H. Rhodes, F. W. Well and A. L. Atkinson.

The men at the yards of the Hydraulic Press Brick Co. and the Wisconsin Red Press Brick Co. at Menominee, Wis., went on a strike, asking for from ten to thirty-five cents a day more and the wheelers to be paid by the thousand.

The Dyett Brick Machine Co., New York, has been incorporated with \$10,000 capital stock. Incorporators are, James H. Dyatt, 160 Albany Ave.; Max Horn, 1232 Putnam Ave., and John P. Lamerdin, 84 Barbey St., all of Brooklyn, N. Y.

Mason City, Ia. is to have another new \$200,000 brick and tile plant. Dr. C. W. Sanders, of Manley, is president; A. L. Rule, secretary; P. F. Rhodes, of Fertile, treasurer; among the stockholders are, H. E. Francisco, J. E. Markley, E. R. Hubbard and A. W. Dawson.

The Newbert-Noyes Co., Augusta, Maine, has purchased the Coney Brick Works and has put same in operation.

Geo. W. Hewes, Mayville, N. Y., has bought 100 acres of clay land and will organize a \$40,000 brick and tile plant.

The Fertile (Ia.) Clay & Peat Co. has been organized at Augusta, Maine, under Maine laws, with \$200,000 capital stock.

The Middleton (Idaho) Brick Co. has its second kiln of brick burning and will continue making brick for some time for use in Middleton buildings.

The Corning (O.) Clay Mfg. Co. has been incorporated with \$40,000 capital stock by John Holden, James Jenkins, M. E. Joyce, C. B. Holcomb and others.

The Rutherfordton (N. C.) Brick Co. has recently been organized. M. L. Justice is president, H. L. Carpenter, secretary-treasurer, and C. E. Hill, manager.

The Akron (O.) Tile Co. has been incorporated with \$5,000 capital stock by Frank Nolte, M. L. Hilson, D. C. Bannerman, Frank Frieberger and F. A. Boren.

The papers have been signed by J. W. Holmes and the Federal Brick Co., New Britain, Conn., whereby this company takes all of his brick for the next five years.

The Corsicana (Texas) Pressed Brick Co. has been incorporated with \$10,000 capital stock. Incorporators are C. R. Sherrill, James Garrity and J. L. Whitesall.

The International Coal & Brick Co., Rockdale, Texas, has been incorporated with \$50,000 capital stock. Incorporators are H. E. Rowlett, B. B. Baxter and W. W. Wills.

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COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

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Brick Plant on three railroads, within two blocks of paved streets, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg. Springfield, Illinois

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Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery
Secor, Ill.

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Egyptian Sheet Plaster Co.
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BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.

Address: "Manager" Care of Clay Record
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FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.
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FOR SALE

Modern Soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address: WM. M. REED, Princeton, Ind.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain Write for particulars. GREAT EASTERN CLAY CO.
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FOR SALE

One Chambers pug mill, practically new, sufficiently large for any output. A first class machine in every respect. Address

ALONZO CURTIS BRICK CO.,
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A first-class tile and brick plant in best part of Iowa. Capacity 15000 brick or tile in proportion. Reason for selling, age. For particulars write to H. L. SWIFT, Riverside, Iowa

A GOOD INVESTMENT

Man with capital and experience to start Brick & Tile plant Good clay, good location adjoining R. R. track. Large home demand for tile. For particulars write

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For Sale—75 Acres; 60 feet of shale, 10 feet of Fire Clay, 3 feet of Coal developed. Excellent conditions Railroad track. Price, \$15,000. Address.

NEW CENTRAL COAL CO.
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Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
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WANTED

Wanted Stone ware Potter—both wheel and Kiln men, Write to

SPOKANE POTTERY CO.
Clayton, Wash.

FOR SALE

Two complete sets Brick-making Machinery, including Chambers Brick Machine, Elevators, Clay Rolls, Granulators, Hoists, etc., also one Frey-Sheckler Brick Machine, at present in operation.

ILLINOIS BRICK CO.
Chicago, Ill.

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A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,

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BUSINESS CHANCE

Would sell an interest in a prosperous Brick Plant to practical man capable of taking charge and operating the yard. Town growing rapidly and no competition in business. Only small amount of money required, but party must be reliable and experienced to receive attention. An attractive proposition is open to such a person. BIG HORN BRICK CO.
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Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
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FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
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KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$45.00.

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PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
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Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 6 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
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PARTNER WANTED

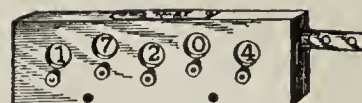
A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
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A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
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Paper Joggers quoted.
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No better made, cut from
\$8 and \$10, to
4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.
Sold by all dealers.
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MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co.
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MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make A1 brick; understand machinery; good business ability; the management of men; have unquestionable habits; first class reference. Address in full and in confidence stating salary expected. X. Y. Z. Care Clay Record,
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FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer. BAKER IRON WORKS
Los Angeles, Cal.

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A good Road Machinery Co.'s make, No. 4 Champion Crusher, in perfect condition; very little used; no reasonable offer refused.

OHIO CLAY PRODUCTS CO.
605 Diamond Bank Bldg.,
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FOREMAN WANTED

Wanted a general Foreman for a No. 1 fire brick and farm Drain Tile Plant located in the Mississippi Valley. Must be sober, up-to-date and a hustler. Good wages to right party. Address:

"F. T." GERMAN INSURANCE AGENCY
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FOR SALE

Startling sacrifice—Completely equipped ornamental brick plant, excellent quality clay, on Baltimore & Ohio Railroad in Ohio, has been bonded for \$80,000.00; for sale unencumbered for \$10,000.00 cash. Address: E. E. SLUCUM
141 Broadway, New York

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1505 St. James Street Los Angeles, Cal

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FRANK P. CLEVELAND,
1726 Adams Express Building
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FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.
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FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
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POSITION WANTED

By an experienced Potter as Superintendent on turning, glazing, kiln cutting or burning.

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One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

79 Chamber of Commerce,
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THE MANUFACTURE OF LARGE FIRE-CLAY GOODS

We pointed out in the first section of this article that the composition of the mixture of clays and other materials is of great importance to the manufacturer of large articles such as tanks and baths, and that whilst this is generally recognized, the effect of the relative sizes of the particles composing the mass (which is equally important) is seldom studied.

The sizes of the different particles does not altogether depend on the size of mesh of the riddles used for sifting the clay as it comes from the grinding mills. Indeed, the riddle thus used merely determines the size of the largest particles, and has no effect in determining the sizes or proportions of smaller particles. These are dependant on the nature of the grinding machinery and on the length of time the clay is subject to grinding or crushing.

With the ordinary edge-runner mills, and a riddle with twenty meshes per linear inch, the "tailings" (or clay which passes over instead of going through the riddle) will often, on a further examination, be found to contain a notable proportion of matter which will pass through a sieve of the mesh used, and the sifted material from beneath the riddle will seldom contain more than 7 per cent. of material of a diameter approaching the size of the holes in the riddle. The greater part (often more than 50 per cent. of the sifted clay) will pass through a sieve with sixty meshes per linear inch!

Consequently, when a riddle with only six meshes per linear inch is used, the clay will generally be sufficiently fine for resisting frequent changes of temperature during and after firing, though the presence of the coarser pieces sometimes presents some little difficulty to the workman endeavoring to obtain a smooth surface to his work.

If the riddle is incapable of dealing with all the clay put on to it by the mill an excessive proportion of "tailings" is produced, and these being returned to the mill are ground still finer, so that an excessively fine clay is produced. In one case, in the author's experience, the "tailings" from a No. 20 riddle contained over 25 per cent. of material

which would pass through a No. 20 sieve with a little shaking or gently brushing, and the greater part of this was so fine ground as to pass a No. 60 sieve. The result of using so short a riddle that it could not accommodate the clay was shown, not only in the small output of the mill, but also in the excessive amount of dunted ware which came from the kilns, and was caused by the presence of too many fine particles in the clay. By replacing the riddle by one 6 ft. long and of the same mesh this difficulty was entirely overcome.

No absolute rule seems possible whereby one can decide on the exact proportions of particles of different sizes which should be mixed to form a perfect material of which to make large articles, nor is one likely to be found, because the influence of the composition of the clay and variations in the drying and firing are too great. Nevertheless, a great step forward has been made when a manufacturer of such articles systematically examines his clay and other materials by passing it through a series of sieves of increasing fineness, and noting the proportion of matter which remains on each.

An excellent series for this purpose consists of six sieves each numbered according to the holes per linear inch, namely—Nos. 6, 12, 25, 40, 60, and 100. If desired a supplementary sieve, No. 200, may be added, but will seldom be found necessary.

When a satisfactory clay or mixture has been obtained it is passed through these sieves in succession, and the proportion remaining on each is noted. In future mixings the same testing is repeated, and any notable variation is enquired into and the variation stopped. Such variation is usually due to something wrong with the mills or riddles, though occasionally it may be due to the introduction of a different clay.

It is very desirable to test the ground clay and other materials separately as well as when mixed, as this gives a more rapid clue to the source of variation when such variation occurs. The test need only take a few minutes, as about 2 lb. is ample for a test if a fairly accurate pair of scales is used for weighing the different portions of clay,

whilst if 1 kilo of clay (or mixture) be used, and the portions on the sieves weighed in grammes, the percentage of each may be found with a minimum of calculation.

Although care is required not to have too much fine clay present in the paste of which the goods are to be made, it is equally necessary to avoid the use of too much coarse burnt material. This latter is harder to the touch than is coarse clay, and will not allow the particles of clay to be smoothed over it in the finishing of the articles. Consequently, when the burnt material is insufficiently ground the goods will have a rough, uneven surface, which does not enamel properly.

As in the burning of either clay or bauxite the particles become cemented together somewhat, there is a scarcity of very small particles in ground bricks. Hence the grinding may be carried further, and may be more prolonged than with raw clay without any risk of the material being too fine. This forms an additional reason why the fineness of the different materials composing the mixture should be tested on each separately as well as on the mixture. It is rarely advisable to pass the burnt material through a coarser sieve than No. 12, and at least 80 per cent. of it should pass a No. 40 sieve when tested, as just described. If this is done little or no difficulty will be experienced in the finishing of the goods, and, provided the raw clay is not too finely ground or present in too large a proportion, the use of sawdust to "open" the mixture may be dispensed with.

The proportion of burnt material which may be added will depend, as already stated, on the plasticity of the clay used.

CONTRACTION.

In order that the goods may not twist or warp when drying or being fired, it is essential that they should shrink but little. This means that but little plastic clay can be used in the material, although some is necessary to bind the particles of material together and to give it the general characteristics of clay. With a carefully compounded mixture the contraction from paste to fired articles should not exceed 1 in. in 15 (or $\frac{3}{4}$ in. per foot), whilst the contraction in the kiln alone should in no case exceed 2 in. in 100 (or $\frac{1}{4}$ in. per foot). The lower the contraction the better the chance of the ware coming true out of the kilns and drying rooms; hence the clayworker should use as much non-shrinking material as possible in his mixtures, so as to keep the contraction at a minimum.

It is also essential that the drying and heating of the articles should be regularly distributed over their whole surface as variations in the drying or heating of different parts will tend to produce strains which will later reveal themselves in the form of hair cracks.

POROSITY.

It is thought by some clayworkers that increasing the porosity of a clay is the chief remedy for dunted or "jacked" ware. This is by no means always the case, although when the particles of clay are somewhat widely removed from each other there is more possibility of freedom of movement of the particles than is possible in a close, dense clay. It is, however, essential that the distribution

of "pores" (or air spaces) should be as even as possible so that there is about the same distance between each of the clay particles. This is not easy to arrange, and particularly when some combustible material like sawdust is used there is a great tendency to have numerous moderate-sized pores and fairly large areas where no such pores exist. This tends to weaken the articles rather than strengthen them, but it is necessary corollary to the use of sawdust or other material, the particles of which are relatively large to those of clay. Apart from this combustible matter is also objectionable on account of articles in which it is used having to be fired twice (once to biscuit the clay and burn off the sawdust, and the second time when glazed), as if glazed green and then fired the glaze will be full of pinholes. Porosity, so far as it is required, is best obtained by a judicious sorting of the clay into particles of the correct sizes (as already explained), so that the larger particles form the skeleton of the article, and the smaller particles of true clay substance take their place in the interstices, and at the same time act as a cement in binding the larger particles together. Where, for some reason, porosity cannot be obtained in this way, the use of sawdust or similar material is justifiable.

REFRACTORINESS.

In order that a sufficiently durable glaze may be fired on the articles (for, in the case of tanks, an acid-proof glaze is often required), it is necessary to fire the goods at a high temperature. Not only so, but the clay mixture itself requires a high temperature if it is to be brought to the point of its maximum durability and strength. Refractoriness of the raw materials is, therefore, a secondary rather than a primary consideration, but at the same time it must not be overlooked.

The capability of the finished articles to withstand rapid changes of temperature involves refractoriness of a somewhat different kind, and is concerned with the freedom of movement of the particles rather than with their fusing point. Hence, clay for baths, hot tanks, etc., should be sufficiently porous, but if the previous considerations have been attended to there will be no difficulty on this head.

No rule can be laid down as to any definite temperature for firing, but it will generally be found that for most purposes for which large articles are used the temperature at which the glaze melts should not be less than 1,100 deg. Cent., and the higher the fusing point of both clay and glaze, the more acid-resisting will be the ware.

DRYING.

If the clay mixture has been properly compounded and efficiently tempered so as to obtain a thoroughly homogeneous product with the different sized particles properly distributed throughout the mass drying should present but little difficulty if sufficient care is taken not to allow portions of an article to dry before the others. It may be as rapid as can be controlled, but must be thorough and complete, or the steam evolved when the goods are in the kiln will cause cracks.

ENGOBING AND GLAZING.

The application of a white clay to the surface of fire-clay articles, in order to give them the appearance of earthen-

ware, is best carried out by the "dry" method, in which the material ("body," or engobe) is made into a jelly and painted on with moderately soft brushes, about ten to fourteen coats being required. This does not dampen the clay so much as when "soft body" is used, and in this way greatly lessens the tendency of some clays to "shell."

The engobe and glaze require careful attention, and should be most accurately adjusted to suit the clay and the conditions of firing, as unless this is done trouble is sure to ensue sooner or later. Most of the defective baths and large enameled ware tanks are produced by lack of care at some stage in the manufacture, and a large proportion of the defects are due to want of skill and attention to the composition of the engobe and glaze, and to too rapid or irregular heating of the kiln.

A very common source of defective goods of this class is the material which drops from the roof of the muffle owing to the expansion of the brickwork during the heating. This cannot always be prevented from spoiling the goods, as they are in some cases too large to cover, but much may often be done by washing the muffle over the glaze-slip after carefully removing any loose pieces of brick.

FIRING.

The general conditions for firing are to be observed with large ware as with small, but the change in temperature must be made more slowly, and the heat requires longer time to thoroughly penetrate the goods. Hence there is a tendency to get ware, which on breaking, is found to be black in the center of the mass. This can only be avoided by care and experience, coupled with persistent observation and inquiry into "the cause" of the various defects which arise from time to time.

The large amount of water vapor ("steam") set free when clay is first heated in the kiln is often overlooked, and so causes difficulty. It is not usually realized that at least 1 cwt. of water is given off from each ton of clay in the kiln, and consequently the arrangements for the escape of this large amount of steam (over 3,000 cubic feet per ton of clay) are neglected.

Just as the rise in temperature must be very gradual in large ware so must the cooling. Too rapidly lowering the temperature of the kiln (especially between 1,000 and 50 deg. Cent.,) is a fruitful source of dunted and cracked ware, and though considerations of cost must tend to prevent the goods remaining too long in the kiln every endeavor should be made to bring about the cooling as steadily and slowly as possible.

If the suggestions contained in this article are carefully followed, manufacturers of baths and tanks will find that the proportion of defective goods turned out from their kilns will be materially diminished, and that the limit in size of which articles can be made will be indefinitely increased until the articles are so large that the kiln can only just contain them.—British Clayworker.

BRICK AS A BY-PRODUCT.

One of the by-products of city refuse destruction in Nottingham, England, is brick for paving or building. The clinkers from the furnace are mixed with cement and, under hydraulic pressure, formed into blocks which are said to be harder and more enduring than rock itself.

CHANGES IN THE UNITED STATES GEOLOGICAL SURVEY.

Dr. David T. Day, who for twenty-one years has had charge of the preparation of the Survey's annual report on the mineral resources of the United States, has requested to be relieved of duty as chief of the division of mining and mineral resources, in order to devote his time to the preparation for the Survey, of an exhaustive report on the petroleum resources of the United States. The Director has accepted Dr. Day's resignation, which will take effect August 1, and has designated Mr. Edward Wheeler Parker to succeed him as chief of the division of mining and mineral resources.

Mr. Parker began his statistical work for the Government in connection with the Eleventh Census, in 1889, and was placed in charge of the Survey's coal statistics in 1891. In 1901 he left the Government service to assume editorial charge of the *Engineering and Mining Journal*, in New York, a work for which he had already gained experience as business manager of the Austin (Texas) *Statesman* and as editor of the *American Manufacturer*, of Pittsburg. Upon a change in the ownership of the *Engineering and Mining Journal* Mr. Parker returned to the service of the United States Geological Survey, where he has since had especial charge of coal statistics. In 1902 he was appointed by the President to serve on the Anthracite Coal Strike Commission, to whose deliberations he brought a wealth of expert knowledge derived from years of research.

Mr. Waldemar Lindgren will be associated with Mr. Parker in the work of this division, and to him has been assigned the scientific supervision of those parts of the annual report of mineral resources that relate to the metalliferous ores. Mr. Lindgren's contributions to earlier volumes of this report have added much to their value, and the organization of a section of the division of mining and mineral resources under his charge provides for the coordination of all the Survey's work on metalliferous ores, for he is already in charge of the section of economic geology of metalliferous ores in the division of geology.

WILL ASK INTERSTATE COMMERCE COMMISSION'S AID AGAINST RAILWAYS ENFORCING HIGHER RATES.

Brick manufacturers of the Wheeling, W. Va., district will appeal to the interstate commerce commission against what they claim are exorbitant rates that are to become effective on eastbound business September 1. At a meeting held this week it was arranged to place the filing of a bill of complaint with the commission. Among the firms that have already signed the petition are the Mack Manufacturing company, the American Sewer Pipe Company, E. S. McLain & Co., and James Porter, all large brick makers. It is said in case the interstate commerce commission refuses to recognize the complaint, an injunction will be asked and the matter will be settled in the courts. One firm, that has contracts for about 800 cars of brick to the east for delivery after September 1, and cannot possibly get the shipment under way before that time, will lose \$25,000 if the new rates are allowed to stand.

SYSTEM.

With manufacturers it is now more of a question than was formerly the case, what part each individual article in a diversified product plays in the summing up of profits.

System has worked great wonders in the industrial and mercantile world. It has made the great transportation companies a possibility, and it has also brought the great industries up to their present high standard. It is comparatively as valuable to the smaller industries, as it brings to light all wasteful practices about a manufacturing plant.

System also shows up any particularly desirable or undesirable product in a diversified list.

Unfortunately, a good business system is not had without effort. The word implies a saving of work. In some ways system does save work, but it requires close attention in order to prove its greatest value.

A good system can not be installed in any business without more or less of what some people term "red tape." It is true that a system throws more or less work upon an office force, but it removes cost from the producing end.

It is observable that many managers consider extra office help as an expensive luxury and such usually are on the lookout for some means of saving what little office work is done, or are inclined to use their own time (which should be more valuable) in work which they can not give the proper attention. It is no uncommon thing to find small manufacturing concerns, who perhaps sell their entire product to a few jobbers, with an office practically uninhabited two-thirds of the time, "because there is nothing to do." Little to do means cheap labor to do it. Oftentimes it is more than difficult for a manager to see how he could use office help to advantage, if offered free. It is a difficult matter to figure out the full advantages and needs of a good cost and record system. Every concern which moves much must have a manager who is not troubled that way. The question is theirs to electrify. The best place to start to build up an industry is in the office. The best source of work supply for an office is in the factory.

Offices are not usually judged from an architectural or decorative standpoint, though it is freely admitted that attractive surroundings are very desirable and have no little influence in business transactions.

The office should be the Central Station in every business. To say that it needs be only small and unimportant is to say that the business with which it is connected is not worth while.

The office conducts primarily only one department; that is selling. In exercising this function it uses, first, correspondence; second, salesmen; and third, advertising, and all these should be based on a thorough knowledge of the manufacturing end.

Unfortunately, good correspondents are not plentiful, and in following out the essentials of business correspondence—thoroughness, clearness and directness—business houses are often compelled to reach the desired ends in a crude manner. Since promptness is recognized as the main essential in business correspondence, the large firms are quickly connected with the fact that it is necessary to employ system in the handling of their correspondence. While

a system applied to the handling of mail will perform the act of keeping replies out, it must be connected with an inside system which will supply the vital point to correspondence. Every manufacturer should understand that his letters must put his proposition before his customers in a clear, convincing manner. It does not matter how well he can handle plain English, his letters are hollow unless emanating from a source which is in close touch with the factory end. The jobber, or customer, is looking for results from all the mail he receives. Literary productions are wasted on the desert air, in the majority of cases.

It is just as evident that salesmen should be well informed in all branches of the business as are the men who have charge of the correspondence. What is wanted in this line is a real live article. No more is it thought necessary to send out entertainers and story tellers; men who could be classed as a fashion plate with a phonograph attachment, as traveling representatives of a business, but rather a man who can show up his case quickly and convincingly, direct and to the point.

Such men are now taking the field. They are going out equipped with a knowledge that carries all the possible questions which may come up in their territory, respecting their particular business. Such men are being equipped in a different manner than formerly. They now get their knowledge through a study of office systems, supplied by data from the producing end, while formerly they had to take a shop experience of two or three years in order to become properly equipped.

One of the most important things to consider, from the manager's point of view, is advertising. If the business world had known, before advertising was so universally acknowledged as profitable, how much money would be spent in non-producing mediums, it probably would never have grown to the wonderful position it now holds in the business world.

Advertising is known to be profit paying of the largest kind. More money is wasted in it perhaps than is made, but the failures are not what we are considering. One style of advertising mediums pay. That style is the engaging, interesting subscriber holder; the optimist and the friend, the editor who can not help but make his paper popular because it reflects his own spirit. Such an editor wakes up the reader, braces up the advertiser, promotes the welfare of his district, makes the grass grow in the desert, in fact, and the whole line of his field is a live wire, and business "gets a move on" when it comes in contact with it. Such a medium is what all advertisers should search for and they should take the nearest approach to it in a medium covering their territory and reaching the sort of trade they are after. Good advertising is often grounded in a poor office.

When one begins to think it over, the office seems to be quite a place—yes, a power of influence.

Mr. Gus Kampmann, of New Orleans, La., has placed his order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster Pa., for a complete soft mud brick equipment to be installed at Nicholson, Miss.

SOME INTERESTING FIGURES REGARDING HUDSON RIVER BRICK CONDITIONS AND OUTPUT

The July bulletin of the New York State Education Department, issued under the direction of John M. Clarke, director of the New York State Museum, gives some interesting information about the manufacturing of building brick in the counties along the Hudson River. Mr. D. H. Newland, who has compiled the information contained in the bulletin, says that this part of the state is especially favored in respect to that particular industry. New York city and vicinity, with its rapidly increasing population, is by far the greatest market for such materials in the United States. There exist enormous clay deposits, suitable for making the common grades of brick, on either side of the river from Rensselaer and Albany counties down to Rockland and Westchester, while the river itself affords a convenient and cheap means of transportation direct from the yards to the market. As a result of these conditions the brick industry of this section has developed to proportions that are without parallel in any other part of the country.

In 1906 the output of common brick in the Hudson River region amounted to a total of 1,230,692,000. This is approximately 78 per cent of the whole output of common brick in the State. The value of the production was \$7,352,377. In the preceding year the output was 1,219,318,000, valued at \$8,191,211. There was thus a gain of 11,374,000 in quantity, but a loss of \$838,834 in value. The number of companies reporting as active was 131, an increase of 12 for the year, or 20 more than in 1904, Rockland county was represented by the largest number, 33, and its production amounted to 296,145,000, valued at \$1,767,012. Ulster county, with 26 operative companies, produced 252,665,000, valued at \$1,465,457; and Orange county made 189,180,000, valued at \$1,170,695 reported by 12 companies.

The average number of brick made in each plant in 1906 was 9,471,000, as compared with 10,246,000 in 1905 and 9,180,000 in 1904. The price for the whole region averaged during the year \$5.98 a thousand against \$6.54 a thousand for 1905 and \$5.79 a thousand for 1904.

The main feature of the past year's record was the remarkable range in the market prices received for brick in the New York market. Owing to the great building activity that prevailed during 1905, the whole product of that year was practically disposed of by the close of the brick-making season, and the plants carried little or no stock through the winter. Before the opening of the yards in the spring of 1906 there was a veritable brick famine. Prices reached an unprecedented high level; as much as \$10 and even \$12 a thousand was paid for the available supply. With the resumption of manufacture they rapidly fell to \$8 or \$9, and as the season advanced they continued to decline, due to a slackening in building operations. As the plants had been brought up to their highest efficiency in anticipation of a profitable season, there were also unusually large quantities offered upon the market. In the last months of the season, the prices fell to about \$5 a thou-

sand at the yard and held at that level throughout the remainder of the year, with small demand. At the end of the year the stock held by the companies along the river was probably in excess of \$300,000,000, or fully 25 per cent of the whole output. A radical curtailment of operations is to be expected for the current season.

The output of common brick in the Hudson River region in 1906 is given in the bulletin as follows:

Albany county, 11 plants, 74,083,000 bricks, value \$461,399; Columbia, 6 plants, 84,500,000 bricks, \$489,750; Dutchess, 19 plants, 167,132,000 bricks, \$975,410; Greene, 6 plants, 64,690,000 bricks, \$90,748; Orange, 12 plants, 189,180,000 bricks, \$1,170,695; Rensselaer, 9 plants, 31,776,000 bricks, \$173,906; Rockland, 33 plants, 296,145,000 bricks, \$1,767,012; Ulster, 26 plants, 252,665,000 bricks, \$1,465,457; Westchester, 9 plants, 70,621,000 bricks, \$458,000. The total output of the 31 plants in the region last year was 1,230,692,000 bricks, the market value of which was \$7,352,377.

The output of common building brick throughout the state in 1906 amounted to 1,575,434,000 valued at \$9,302,165. In addition there were made 24,625,000 front and fancy pressed brick, valued at \$386,124; making an aggregate output of brick for building purposes of 1,600,059,000, valued at \$9,688,289.

TESTS ON CONCRETE AND REINFORCED CONCRETE

Bulletin No. 10, Tests of Concrete and Reinforced Concrete Columns, Series of 1906, by Prof. Arthur N. Talbot, has just been issued by the University of Illinois Engineering Experiment Station. This bulletin will be of interest to many engineers, architects and constructors engaged in reinforced concrete work. Comparatively few tests have been made on concrete columns, and in most of these, small test specimens were used. The tests described in this bulletin were made on the 600,000-lb. testing machine in the Laboratory of Applied Mechanics. The care exercised in the testing, as well as the effort given to make the fabrication of the columns approach conditions of engineering construction, add to the value of the results. The study of the problem and the analysis of the tests made in the bulletin are features which will be appreciated by many readers. The results show the value of reinforcing columns with longitudinal rods and also the necessity of exercising care to secure uniformly good work in construction. Attention is called to the fact that the strength of concrete columns may be expected to be less than that of cubes made and tested in the ordinary way. Caution is also given concerning the construction of columns in building operations. The bulletin uses a method of determining the relative stresses in steel and concrete and discusses the basis of working stresses and factor of safety for this kind of construction. Those interested in the analysis of the stresses which are developed in reinforced concrete will be interested in the views expressed as to whether elastic or inelastic deformations should be used in the determination of the modulus of elasticity and also in the form found for the stress-deformation curve of the concrete in the columns. The bulletin contains 64 pages. The work on concrete columns is being continued, a series of tests on hooped columns being now in progress.

L. P. BRECKENRIDGE.

RELATIVE COST OF STEAM AND PRODUCER GAS COMPARED*

The methods of manufacturing producer gas may be classified under two headings, according to the way in which the draft is created—namely, induced or forced, says J. R. Armer, of the Grand Trunk Railway, Toronto.

Almost any carbonaceous fuel may be used in the manufacture of producer gas, including charcoal, coke, hard coal, lignite, peat, wood, sawdust, and even city refuse. If coal is used, it should be of good quality. It should have a low percentage of ash, and should not clinker. In case the gas is to be used in gas engines or in the manufacture of iron, it should contain a low percentage of sulphur. The coal should be as nearly uniform in size as possible, and not too large. The fuels used in suction producer gas plants, which are the most common in small units, are usually coke or anthracite coal. These fuels do not clinker, and they produce a gas containing a low percentage of tar. Lignite and peat have been used in Europe in pressure producers, and the gas has been used for gas engines in many instances.

Some of the devices used for cleaning are as follows: Liquid scrubbers, rotary scrubbers, deflectors and absorbers. The abstraction of tar is one of the greatest difficulties met with in cleaning producer gas, and as its elimination is absolutely necessary for the best results in gas engine practice, the means adopted for its removal are very important considerations.

Where there is an excessive amount of tar some builders use rotary scrubbers, or tar extractors, in addition to the wet scrubbers. They claim very satisfactory results. Other makers, instead, advocate having the fires so arranged that the tendency is for the tar to be converted into a permanent gas in the producer. To accomplish this, the products of distillation are passed through a hot bed of fuel.

One of the important points about a producer gas plant is the short time required in starting, and the little attention required when it is standing idle; even after several hours' idleness the plant may be started and be working at its full capacity in a few minutes.

The labor required to operate with a pressure plant is about the same as that required for a steam plant of similar size, while with a suction producer plant the labor required is much less.

The amount of water used in a producer is not more than half that required in a steam plant of similar size. If to see if the coke or other material is clean enough to assure efficient working. They should be cleaned once in six or eight months, according to conditions.

The fire should be drawn from the producer about once a week, and the clinkers removed; if the fires are re-kindled immediately so that the fire brick lining is not chilled, the life of the lining will be prolonged considerably.

The regulation of the steam supply to the producer is of considerable importance. In pressure producers the regulation is not very difficult, but in suction producers, where the air supply in the producer depends upon the load on the

engine, it requires special attention. The amount of steam going into the suction producer must always be proportioned to the amount of gas used by the engine, so that the fires will neither become too hot nor dampened. Different firms have different methods of regulating this.

In the case of the gas producer, the gas is conveyed to the engine cylinder, where almost perfect combustion is obtained. The losses in this case are occasioned mainly by the heat radiated from the producer and connecting pipes, the cooling water, used in the scrubbers, be used over and over again, this will be greatly reduced.

No more skill is required to handle a producer gas power plant than is needed for a steam plant of similar size; but it may require some time for men trained to handle steam plants to become accustomed to gas engines and gas producers.

For best results, plants should be kept clean; pipes should be kept gas tight, and arranged so that they may be cleansed of dust and tar; scrubbers should be inspected periodically, in the heat lost in cooling the gas, in cooling the engine cylinder, and in that lost in the exhaust from the engine. The amount of energy lost in this way compared to the amount originally in the coal is very large; the proportional loss, however, is much smaller than in a steam plant.

In a steam plant all the combustion takes place in the fire box, under poorly regulated conditions, an excessive flow of air always being required which carries a large proportion of the heat up the stack, together with unburnt gases, and particles of carbon in the form of smoke. The remaining heat is absorbed by the boiler in generating steam, or is radiated from the fire box; further losses occur through the radiation from the steam pipes and engines, and finally there is the large loss from the exhaust on the engine.

The following heat losses in a modern steam plant, when compared with the losses in the gas plant, will give an idea of where the greater efficiency of a gas power plant, over a steam plant, comes in: Out of 13,500 B. T. U., the value per pound of coal used in the fire box, 135 B. T. U. were lost in the ashes, 675 in radiation from the boiler, 2,970 in chimney loss, 190 in auxiliary exhaust, 520 in radiation from steam pipes and engines, 7,737 in the exhaust from the condenser, 1,273 were converted into power. Considering the mechanical efficiency of the engine as 93 per cent, this would give 1,176 B. T. U. as delivered from the engine in brake horse-power. By comparing 1,176 B. T. U. with the original 13,500 B. T. U., the efficiency of the whole plant is 8.7 per cent.

As a comparison with this, the following figures have been taken from a report on tests made with the Crossley suction gas plants and gas engines by consulting engineers and others, and read before the Manchester Association of Engineers in connection with a paper on this subject.

In the tests reported, the thermal efficiency of the plants ran as high as 24.95 per cent. One of these tests was made with a plant at Milford-on-Sea Electric Works, which at the time of making the test had been in operation for some months. The efficiency of this plant was low in comparison

*Extract from paper read before the Central Railway and Engineering Club of Canada.

with some of the results obtained, as will be seen, so that the comparison is conservative. The fuel used was anthracite coal having a heating value of 14,895 B. T. U. per pound. The indicated horsepower of the engine was 46.25 I. H. P. The test lasted 3 hours 49 minutes. The total amount of coal used was 133.5 pounds; the coal used per I. H. P. hour was .785. Assuming that the mechanical efficiency of the engine was 85 per cent, the amount of coal per B. H. P. would be .89 pounds. The value in B. T. U. of .89 pounds of coal would be 13,256 B. T. U., which when compared with 2,545, the B. T. U. value equivalent to 1 H. P., gives the efficiency of the whole plant, including the mechanical efficiency of the engine as 19.35 per cent. If the losses in this case be divided up according to the usual proportion of loss in the different parts of the suction producer power plant, they will be as follows: Out of 13,256, the B. T. U. value of the fuel used, 2,651 are lost in ashes, radiation, cooling of gas, etc., 4,445 in exhaust, and 3,166 in cooling the cylinder; the remaining 2,994 are converted into power; the efficiency of the engine being 85 per cent, 2,545 of these are converted into B. H. P.

In comparing these two plants, the efficiency of the steam plant being 8.7 per cent, and that of the gas plant being 19.35 per cent, we find a saving of 55 per cent in favor of the suction producer power plant. In neither of these cases has allowance been made for standby losses, which favor the steam plant.

Regarding fuel required per H. P., manufacturers make numerous claims, many of which have been substantiated. The claims average about 1 pound of anthracite per H. P. per hour, and vary from 0.6 to 1 1-3 pounds per B. H. P. per hour. The 0.6 figure is pretty low, but numerous tests have shown a consumption as low as .8 pound anthracite per B. H. P. per hour.

Considering the high thermal efficiency and the many other points of advantage about a producer gas power plant, its outlook for the future is very bright. It has passed the experimental stage and has become a formidable competitor of all classes of power. Its field of usefulness will doubtless be widened greatly, and already it is being considered as a means of propelling vessels, driving traction engines, and for developing power under many other conditions.

In the discussion of this paper several points of interest were brought out. Mr. Samuel Groves said that the pioneers in this work were the French Canadians. To his knowledge over ten suction gas plants had been installed in Quebec. In England they are ahead of both Canada and the United States in the utilization of the gas engine. The United States, however, have beaten the world in the use of the gas producer. The best practical results in Canada have been achieved at Wellington, Prince Edward County, Ont. There, with a 65 H. P. suction gas plant, electrical energy is being supplied at \$20 per H. P. year, 10-hour day; 18 arc lamps for street lighting at \$530 per annum. The stores and residences pay one-half cent per night for continuous incandescent light. Mr. Groves spoke of the electric furnaces as having a bright future, and brought out the fact that the waste gases produced in the electric furnace are comparatively pure, and are, therefore,

very suitable for use in the gas engine. He predicted that the suction gas producer system would play an important part in opening out and developing industries in the great Northwest, where lignites abound.

Mr. R. J. Goudy pointed out that the economy of the gas engine operated by producer gas lies in the almost direct conversion of the energy in the coal into the work. He said that the United States navy were adapting the gas producer and gas engine in naval work.

"IDEAL" MACHINES FOR MEXICO.

The success of the Ideal Concrete Block Machine, its universal adoption, and the increasing demand from every country in the civilized world, is a modern proof of the ancient saw that "it never rains but it pours."

There has recently left the factory of the Ideal Concrete Machinery Co., of South Bend, Ind., the third carload of a four car shipment of Ideal Concrete Block Machines to Mexico. The fourth car-load is practically ready for shipment, and will go forward at an early date.

Heavy shipment of the Ideal Machines to foreign countries is becoming so frequent as to be regarded as quite an ordinary occurrence. Shipments have recently been made to Valparaiso, Chili; Panama, Central America; Khartum—Sudan, Egypt; Glasgow, Scotland; Budapest, Hungary; Bucharest, Roumania and elsewhere.



Carload of Ideal Concrete Machines En Route to Mexico

The heavy export requirement for Ideal machines, coming, as it does, to swell the monthly multiplied domestic demand has necessitated increased factory facilities that rank the Ideal Concrete Machinery Co. among the leading manufacturing concerns of the middle West.

Recent improvements to the Ideal Machine make it universal in its adaptability and really unique among machines for cement block manufacture. An attractive and expensive catalogue has recently been issued that is a valuable guide to the home builder and the block manufacturer alike. It is sent free on application, and the information it contains makes it well worth sending for.

Two carloads of "Martin" Latest Improved Brick Machinery is being forwarded at the present time to Canada by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

POROUS DRAIN PIPES.

ONE of the most serious difficulties of the drainpipe maker of recent years has been the pressure test which has been applied in order to prove that the pipes were capable of withstanding the action of water under a considerable head of pressure.

This test has usually been carried out by closing both ends of the pipe and forcing in water by means of a pump until a definite pressure (different in the case of different makers) has been reached. If no loss of pressure is experienced at the end of a certain time the pipe is considered to be satisfactory, but if any water oozes to the surface of the pipe (owing to its being "porous") the pipe is condemned as useless.

This term "porous" is used in a somewhat misleading manner, as it includes not only the natural air-spaces or pores of the clayware itself, but it also—and as a matter of experience much more frequently—covers the defects of structure, and the small but real cracks and fissures which exist in the material.

These tiny cracks and fissures are extremely difficult to locate, and with certain clays are almost impossible of prevention unless the process of working up the clay is so prolonged that the cost of manufacture becomes excessive, and no profit results.

Laminating clays, and those in which there is a strong tendency to "flake" are particularly liable to this defect, and as the amount of lamination or flaking varies greatly from time to time, it not infrequently happens that a long run of good pipes may suddenly be ended by a run in which quite useless pipes are made, owing to the increased laminating power of the clay, though the method of working has been in no other respect altered.

Whilst such lamination and failures in structure may often be attributed to faults in the machinery or method of working the clay, it is by no means seldom the case that it is the composition of the clay itself which is at fault.

Thus, the flakey clays are usually highly plastic, this very plasticity being the cause (amongst others) of the production of the flakes. Hence a reduction of this plasticity by the addition of a non-plastic material will frequently remove much of the trouble, and if the added materials are carefully chosen and added in the correct quantities—no more and no less than is necessary to obtain the best results—the difficulty may be entirely removed.

The most suitable material for thus reducing the plasticity of a drainpipe clay is a fairly coarse sand which at the same time contains a sufficient proportion of grains of less sizes to properly mix with the clay and form a mixture of suitable adhesiveness and strength. The disadvantage of such a sand is that it is apt to produce a rough, somewhat unpleasant surface, owing to the different action of the salt on the sand and on the clay.

Where the appearance of the surface is of importance, ground burnt clay of the same composition as the pipes may be substituted for the sand, with excellent effects if the clay be properly ground. It must not be too fine nor too

coarse, but must contain both coarse, medium and fine particles in suitable proportions. On this account it is best crushed in a crusher, followed by crushing rolls, as by setting these latter at a suitable distance from each other the correct proportions of the different-sized particles of material can be fairly easily obtained. The disintegrator and edge-runner mill are more adapted for fine grinding, and are less suitable for the reduction of burnt clay for use in preventing lamination.

When the porosity of drainpipes is not due to any structural failure, such as cracks and fissures, but is entirely owing to the large number of pores in the clayware, the best remedy will usually be found in the addition of a more easily sintering clay to that generally used, so that the more fusible clay may, by its fusion, fill up some of the pores, and bind the remaining particles closer together.

The use of such expensive materials as felspar, Cornish stone, and other easily fusible substances of a similar nature is seldom necessary, as their cost is often prohibitive, but surface clays can usually be obtained which are sufficiently rich in fusible materials to produce the effect desired.

The use of salt or other alkaline material is also to be deprecated, as being too intense in their action, and incapable of sufficient fine division to distribute them evenly through the clay. When these alkali holding materials form part of a more complex substance (as in the case of felspar) this difficulty of distribution does not occur, as it has already been effected by natural agencies to a degree far more perfect than can be accomplished by the hand of man. Hence the reason for using natural clays of lower melting point in relatively large quantities in preference to much smaller quantities of alkali fluxes.

Where materials are added artificially to increase the porosity of the clay (sawdust, coke dust, and finely powdered coal being commonly used for this purpose), and the pipes are incapable of standing the pressure test, the omission of part or all of these combustible materials will probably be the easiest way out of the difficulty, except in the case of those clays which cannot be burned without some non-clayey material. Such clays are not suitable for manufacturing drainpipes of the highest quality, and their employment for this purpose cannot be attended with satisfactory results.—The British Clayworker.

MADE GENERAL MANAGER OF TILE WORKS.

At a meeting of the board of directors of the Zanesville, Ohio, Tile Company, Harry L. Mooar, son of E. M. Mooar, of Columbus, was elected general manager of the company, vice J. B. Owens, resigned. Mr. Owens was the original owner of the property and has grown wealthy. He will spend a number of months in travel.

Mr. Mooar, who was formerly in the lumber business in Columbus, went to Zanesville about two years ago as secretary and treasurer of the tile company and has earned his promotion to general manager. Mr. Owens' interests in the plant were purchased by Mr. Mooar and several Columbus capitalists, and the plant will be greatly enlarged. J. E. Blackburn of Columbus, is president of the company.

CERAMIC BRICK COMPANY MAKING A FINE ARTICLE FROM POTTERY REFUSE

That the manufacture of high grade fire brick can be accomplished from the refuse of potteries has been thoroughly established is evidenced by the success which has attended the Ceramic Brick Company, of Harvey avenue, East Liverpool, O., which started in on a small scale some months ago and last evening at a meeting of the stockholders its capital stock was necessarily increased from \$10,000 to \$20,000.

So far but one kiln is being used, but another has been started and by fall it is expected that six will be built and the capacity per day increased from 3,500 to 21,000. At present but three tunnels heated by steam are used to dry the brick, but three others are to be added at once, which will amply take care of the increased output. Interested in the company are Pittsburg, Wellsville, East Liverpool and Steubenville parties, the president of the company being John M. McCord, of Wellsville, while Judge Frank Kerr, of Steubenville, is a director. In fact, it was to the latter that J. R. Frost, who manages the plant and who also discovered the process of making the brick, went after performing a series of successful experiments with the crushed saggers and other refuse from the potteries. Mr. Frost was formerly an engineer and has traveled from coast to coast. Arriving here two years ago, it did not take him long to discover the fact that all of the potteries had an immense amount of waste material on their hands which, if it could be utilized, ought to be the source of much revenue to them as well as being of invaluable use for some purpose. It occurred to him with his knowledge of furnaces and their need of brick capable of standing excessive heat that such could be made from this waste material and he accordingly had a half ton of the refuse ground at Golding's flint mill, which he took to McKeesport and where for the greater part of a year he made experiments and was finally rewarded by obtaining a brick capable of withstanding 3,800 degrees of heat. At once he set about incorporating a company, following which a plot of ground 100x270 feet was obtained near Anderson's Porcelain Works, which, because of the presence of a switch there, has been admirably suited for the purpose.

The brick so far manufactured are being used in the construction of the new kilns but beginning this month enough will be shipped to furnaces as to admit of their complete trial. The output will probably be sent entirely to two of the Pittsburg furnaces, who can use all and more turned out by it.

Mr. Frost has applied for a patent on his discovery and on several others which he has made, but has not yet begun their manufacture. All of these are now pending and favorable action is expected on all of them.

The brick manufactured is without a doubt the finest manufactured in the United States and are destined to become of great demand and may eventually revolutionize the entire fire brick industry.

It is the intention of the company when the plant has been enlarged to manufacture a building brick, crucibles and also large flooring tile which Mr. Frost thinks can be as easily made from the pottery refuse as the fire brick.

Eight men are now employed, but by fall there will be need of 20 to 25 men, while the beginning of the manufacture of other articles may cause the need of many more.

THE EFFECT OF SCALE ON BOILER TUBES

The Engineering Experiment Station of the University of Illinois has just issued Bulletin No. 11, "The Effect of Scale on the Transmission of Heat Through Locomotive Boiler Tubes," by Edward C. Schmidt, M. E., and John M. Snodgrass, B. S. This bulletin describes a series of experiments begun in 1900 by the railway engineering department of the University of Illinois, to determine the relation of the heat loss, due to the scale thickness. The experiments comprise tests on single tubes as well as tests of the entire locomotive boiler.

The results of all the tests, plotted with reference to scale thickness, show great divergence in the heat loss, which is ascribed to differences in scale structure. The bulletin is of interest to all who have to do with the operation of steam boilers in localities where pure feed water is not available. The conclusions derived from the tests are summarized as follows:

1. That for scale thicknesses up to $\frac{1}{8}$ in., the heat loss may vary in individual cases from insignificant amounts to as much as 10 or 12 per cent.
2. That the heat loss does increase with thickness in an undetermined ratio.
3. That mechanical structure of the scale is of as much or more importance than thickness in producing this loss.
4. That chemical composition, except in so far as it affects the structure of the scale, has no direct influence on heat transmission.

L. P. BRECKENRIDGE.

CLAIMED THAT PAVEMENTS WILL BE WATER TIGHT AND WILL BE MORE DURABLE

It is the intention of Bloomington, Ill., city authorities in charge of the improvement work to investigate the possibility of using an asphalt filler for the spaces between the bricks of the top courses of the new pavements. This filler is now in use in Decatur, Springfield, Champaign and other Illinois cities. It is said to be a success there and it is possible that the board of local improvements will go down to Decatur to see some of the filler on the pavements of that city.

The cement filler is put in when the pavement is first laid by pouring it at a temperature of 330 degrees between the courses of the brick. As the asphalt filler does not melt or soften much before a temperature of 220 degrees is reached it can be seen that it will not get soft and wabily under our temperature which may sometimes reach 100 degrees in the sun.

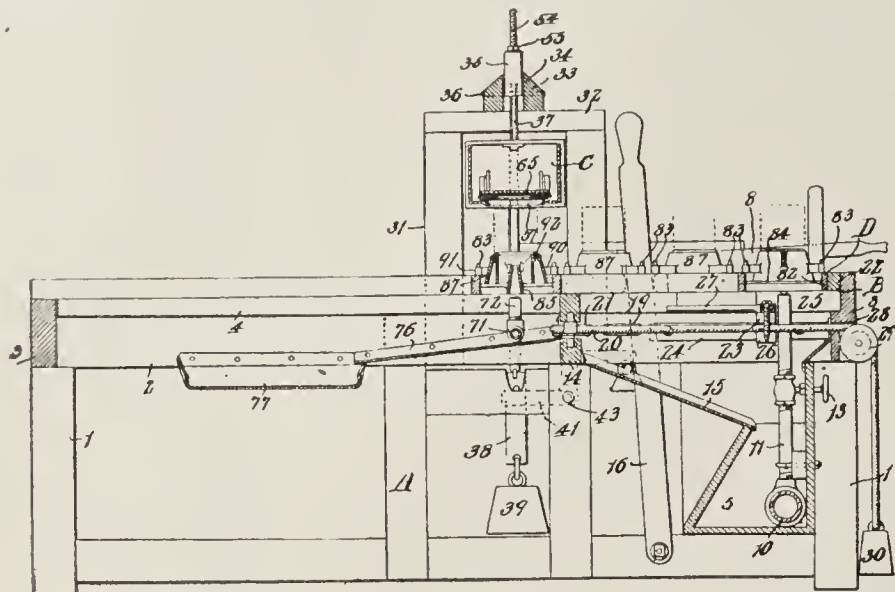
The filler makes the pavement water tight. It does away with the many repairs that come from a brick being loose or some other cause that may allow the water to get under the pavement. The rains and snow of the winter had no more effect on it than the summer suns. It is water tight and so durable that pavements in use for ten years hardly have their joints worn out. All of these things are claimed for it by the various companies that make the filler and sell it under various names.

Another good claim for the filler is that it makes the pavement almost noiseless. The clatter of the solid brick pavement is lost as the vibration extending from brick to brick is lost in the asphalt filler. The asphalt itself is practically noiseless and it makes the brick about the same.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

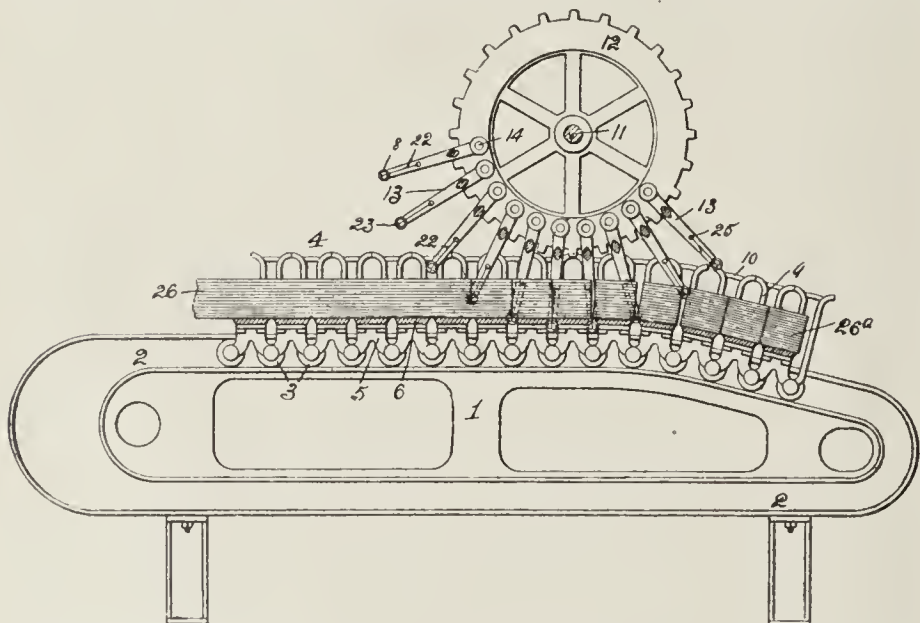
852,734. Machine for Glazing Pottery. Richard M. Matthews, Metropolis, Ill., assignor of one-half to Robert K. Lowry, Metropolis, Ill. Filed June 28, 1906. Serial No. 323,858.



Claim—In a machine of the character described the combination with a holder; of a counterbalanced tank thereabove having a normally closed outlet, and means for relieving the tank of the weight of the counterbalance to cause the tank to lower and its outlet to open by contact with an article on the holder.

853,573. Brick and Tile Cutting Machine. Jacob Bensing, Malinta, Ohio. Filed Aug. 29, 1906. Serial No. 331,705.

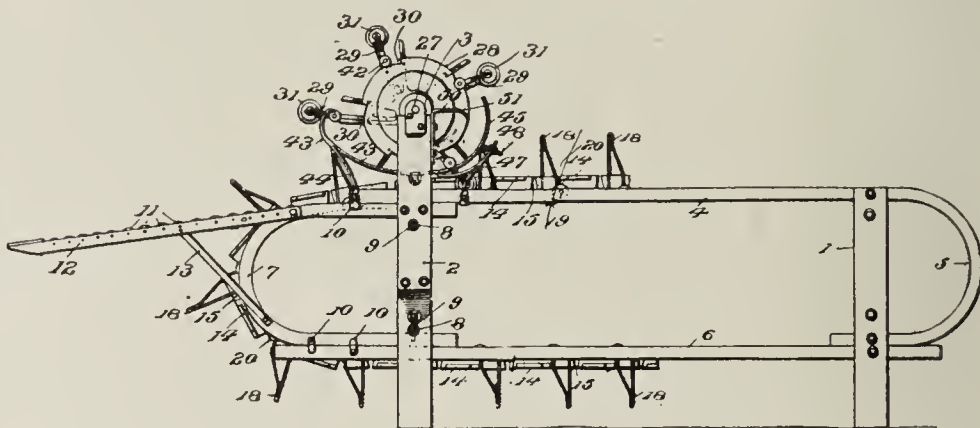
Claim—In combination, a revoluble cutter-frame having guide-members at its extremities, a cutter-wire carried by the cutter-frame and off-set outwardly from the axes of the guiding-members, and an endless carrier comprising a plurality of pivotally connected sections each having a U-shaped guide standard inclined slightly from a perpendicular and adapted to effect a positive guiding of the cutter-wire both in its descending and ascending movements through a column.



The combination with a carrier having guide-standards provided with spaced parallel guide-arms, of a revoluble cutter carrying a plurality of U-shaped cutter-frames, a spindle fixed at the end of each frame arm and having its inner end formed with a flange provided with an outwardly disposed notch the depth of which is less than the radius of the flange, a guide-roller carried by each spindle to co-operate with the guide-standards of the carrier, and a cutter-wire spanning each cutter-frame and engaging the notches in the associated spindles whereby it is offset from the axes of the guide-rollers, substantially as described.

853,858. Brick, Block or Tile Cutter. Byron E. Bechtel, Waterloo, Ontario, Canada. Filed Nov. 19, 1906. Serial No. 344,066.

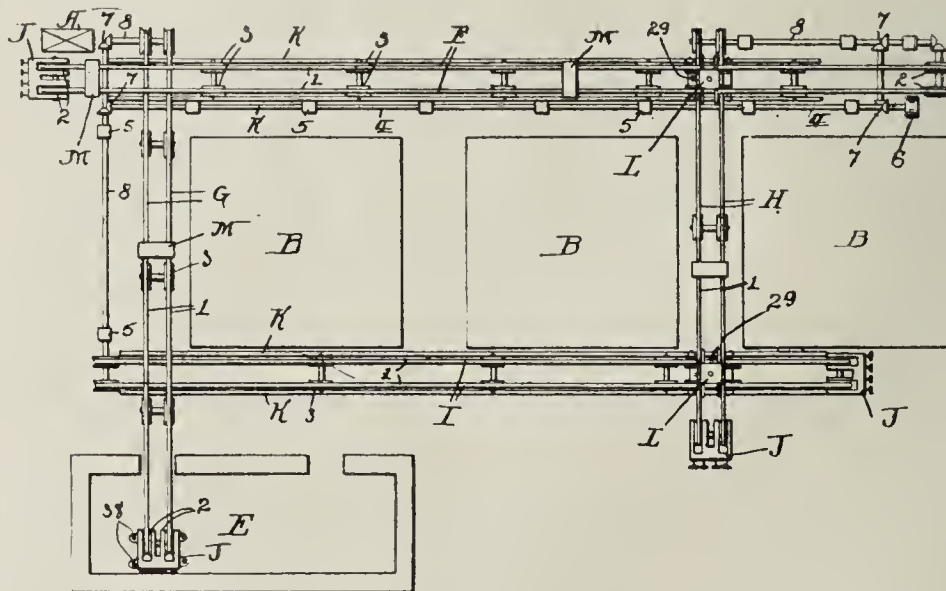
Claim—A cutting device for severing plastic material bars into sections of uniform length comprising a cutting reel, an endless traveling table consisting of pivotally united sections, each provided with a reel actuating portion, means whereby the spacing of said portions can be varied to vary the length of the sections cut from said bar, and means whereby the spacing of said portions is rendered uniform throughout a side table, whereby said sections cut from the bar will be uniform in length, substantially as described.



A rotary cutting reel having outwardly extending arms, a cutting wire stretched between and passed through said arms, means detachably securing said wire at the outer edges of said arms, said means comprising a mounted rotary spindle loosely mounted in ears at the outer edge of an arm and tending to move away from the outer face of the arm, a ratchet wheel and tooth for locking said spindle, one end of the wire wound on the spindle, the tension of the wire holding the wheel and tooth in locking engagement.

853,365. Brick-Conveyer. Charles H. Klein, Chaska, Minn. Filed March 15, 1906. Serial No. 306,178.

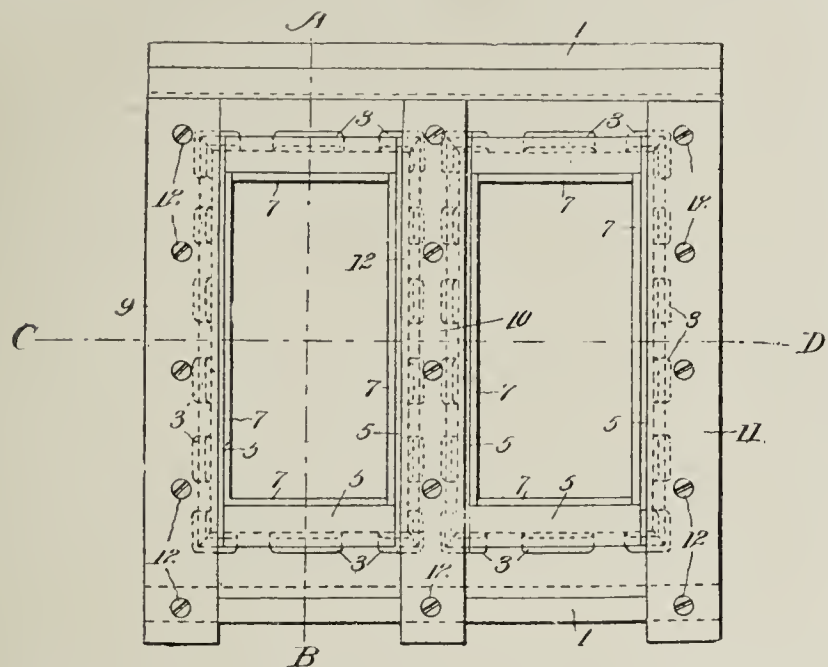
Claim—A conveyer, comprising, in combination, longitudinal cables spaced apart, on which pallets are adapted to be placed, transverse cables also spaced apart, means for driving said cables at the same surface speed to advance said pallets and means for lifting said pallets from one set onto the other set of cables.



A conveyer for pallets of brick, comprising, in combination, a main conveyer for pallets or similar articles, a transverse conveyer, means for driving said conveyers, and means for automatically lifting said pallets from said main conveyer to said transverse conveyer; each of said conveyers comprising endless cables spaced apart and traveling at substantially the same surface speed.

853,442. Interchangeable Mold-Box. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a Corporation. Filed Dec. 29, 1906. Serial No. 349,968.

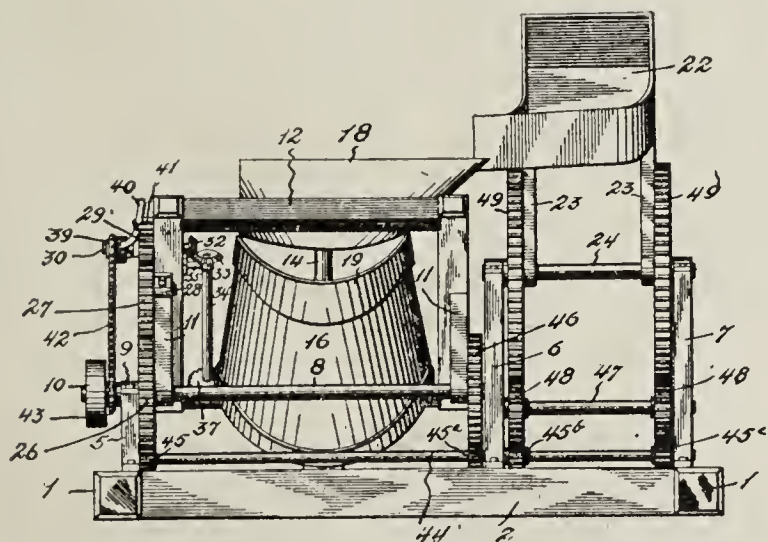
Claim—A mold box comprising inner and outer frames, said inner frame being interchangeable and removably fitting the outer frame, said frames having their adjacent sides tapering downwardly, and parallel and substantially fitting each other, said inner frame having its interior fashioned to conform to the article to be molded, and retaining plates fixed to one of said frames and having a long side extending horizontally over in contact with the top or thicker end of the other frame to removably hold the inner frame in place.



A duplex mold box comprising an outer frame having side and ends and a partition dividing said box into two compartments, the side walls of the partition and the inner walls of said sides and ends being tapered, an inner frame for each of said compartments, said inner frames having outer walls tapered conformably to the inner walls of the outer frame, the upper surfaces of the outer frame and of the partition being machined or recessed, retaining plates fitting said recesses and extending over in contact with the upper surfaces of the inner frames, and removable fastening means for said plates.

854,029. Mixing-Machine. Joseph D. Campbell, Columbus, Ohio, assignor to The American Concrete Machinery Company, Columbus, Ohio, a Corporation of Ohio.

Claim—In a mixing machine, the combination with a supporting frame of a mixing drum, means for feeding the materials to be mixed to the drum, and a common mechanism carried by the supporting frame for simultaneously moving both the drum and the feeding means to unload the former and to move the latter into such position that it may be loaded.

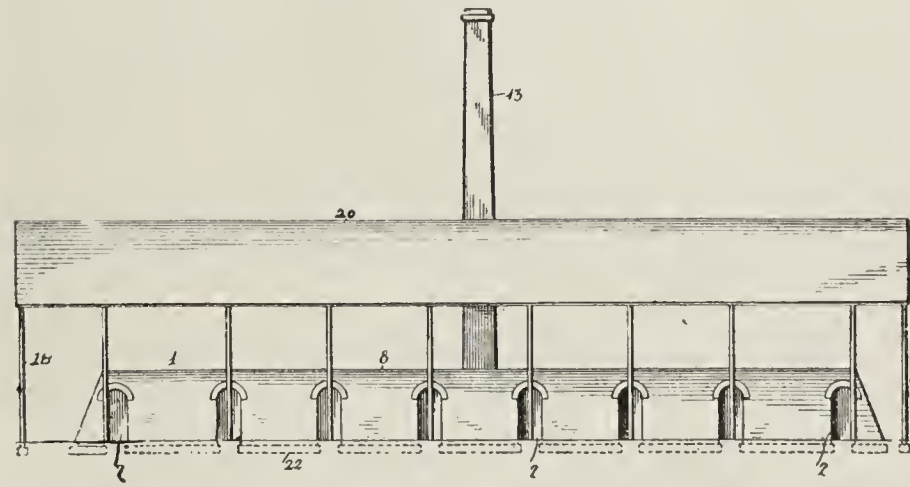


In a mixing machine, the combination with a supporting frame, of a tilting frame, a mixing drum rotatably mounted in said tilting frame, a hopper carried by the tilting frame and adapted to conduct material to the drum, a tilting trough adapted to conduct material to the hopper, and common mechanism for simultaneously tilting the drum to discharge

the contents thereof and tilting the trough downwardly into such position that it may be loaded.

855,384. Brick-Kiln. Baptiste F. Canavera, Coulterville, Ill. Filed Feb. 4, 1907. Serial No. 355,770.

Claim—In a continuous kiln, walls arranged to form a continuous elongated space, the end portions being substantially semi-circular, the outer wall being provided with openings leading into said space, and the inner wall provided with a chamber in communication with the chimney of the kiln and having its ends enlarged, means for dividing said space into individual compartments, and means for establishing communication between said compartments and said chamber in the middle wall, the end compartments communicating with the enlarged portions of said chamber.

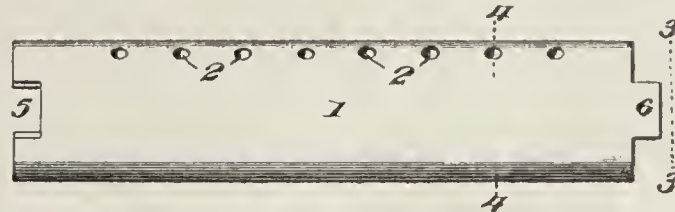


In a continuous kiln, walls arranged to form a continuous elongated space, the ends of which are semi-circular, means for dividing said space into individual compartments, the outer wall of the kiln being provided with openings, one for each compartment, and the central wall being provided with a chamber communicating with the chimney of the kiln and having its ends enlarged and semi-circular, the top of the kiln being provided with rows of perforations for each compartment and the chamber and its enlargements in the central wall being provided with openings, one for each of said rows of openings in the compartments, a removable flue on the top of the kiln for establishing communication between each of said rows of openings in the compartments and the corresponding opening in the chamber in the middle wall.

852,500. Process for Manufacturing Bricks. Laurence Elkus, Indianapolis, Ind. Filed Oct. 29, 1906.

Claim—In the process of manufacturing bricks, first introducing the sand into a cylinder and drying it; (2) pulverizing and slaking lime; (3) mingling hydrated lime with dried sand and carbonate of barytes; (4) discharging the said mixture into a revolving pan in which it is thoroughly agitated and moistened; (5) withdrawing the moist material from the said revolving pan and pressing same in into requisite forms; and finally hardening them under a steam pressure in the hardening cylinder, substantially as described.

855,652. Drain-Tile. Herman Mori, Hartville, Ohio. Filed Feb. 19, 1907. Serial No. 358,299.



Claim—The herein described tile for drains having a flattened portion upon its outer surface and a plurality of openings at a point diametrically opposite the flattened portion, a pair of tongues at one end of said tile and a pair of slots at the opposite end thereof, said tongues and slots having tapered walls whereby when the tongues upon one tile are disposed into engagement with slots upon the next succeeding tile, said tongues and slots will be interlocked.

CLAY RECORD.

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Vol. XXXI.

JULY 30, 1907.

No. 2

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Subscribe today for The CLAY RECORD.

When a man sits down and hopes for the best, he is apt to get the worst of it.

Never explain—your friends do not require it and your enemies will not believe you anyway

Nine times out of ten the fellow who is let in on the ground floor falls between the girders and lands in the cellar.

Getting replies to an advertisement is not one half of the battle. It is the follow-up system that makes the most customers out of inquiries.

All things come to him who waits; therefore while waiting you should be whittling out a good club to knock it down with when it gets here.

The CLAY RECORD is the only semi-monthly clay journal in America that is printed twice a month. You can receive it one year for the sum of one dollar. Don't delay sending for it. Delays are dangerous. If the value is not in it for you at the end of the year we will willingly refund your money. Subscribe now!

BRICK MANUFACTURERS OPPOSE THE NEW RATES

Manufacturers of brick in Pennsylvania, Ohio, and other state, it is expected, will ask the Interstate Commerce Commission to give them relief from rates adopted by the Trunk Line and Central Freight Associations, to take effect on eastbound business Sept. 1.

Failing in this, it is proposed to seek an injunction to restrain the railroads from putting these rates in effect, and then have the matter adjudicated in the courts.

One firm in the Pittsburgh district is under contract to make delivery of about 800 cars of brick in the East after Sept. 1. As they cannot get the shipment under way before that time, the new rates will apply, and having made its contract on the basis of present rates a loss of \$25,000 is in prospect.

The prospective controversy concerning rates on freight has its origin in the recent ruling of the Interstate Commission in response to complaints of an Ohio manufacturer against the Pennsylvania lines and the Baltimore & Ohio, in which it was held by Commissioner Lane that all classes of brick look alike to the commission and must, therefore, be hauled at the same rate, instead of diversified classification for paving, building and fire brick, in the order named. As a result, the Trunk Line Association last week advanced all brick rates to the fire brick scale.

The Central Freight Association immediately concurred in this action, making a new rate of \$5 a ton, Chicago to New York, an advance of \$1, the present rate being \$4 on paving brick. From Pittsburgh it is now \$3 on fire brick and \$2.40 on paving brick, so that the increase is 60 cents a ton from the Pittsburgh district, which is considered exorbitant and restrictive of trade.

In consideration of the attitude of the commission, and as at present rates on paving brick are considered by manufacturers to be all that the traffic will bear, the brick men are hopeful their petition to the commission will not be in vain. Building brick manufacturers also object to the advance on their product, although it is less than paving brick.

TO INVESTIGATE SAND LIME BRICK

A special committee of the National Fire Prevention Association has been appointed, headed by H. C. Henley, chief of the St. Louis, Mo., fire prevention bureau, to investigate the merits of sand lime brick. So far the association has refused to accept these as equal in fire resisting qualities to the clay brick and exhaustive tests will be conducted at the Underwriters' laboratories in Chicago. Over 150 factories are now engaged in making sand lime brick.

BRICK PRICES LOWER

Hudson river bricks are moderate in price, under heavy arrivals, though the consumption is heavy—between seventy and eighty cargoes going out weekly. Light hards have been cheap all season, as there has been very little demand for them, for the work now in hand calls mostly for the best stock. Not so many "Havard" bricks are being sold as two years ago, and the light shades again have the call for fronts.

OBITUARY

William Dull, a prominent citizen and manager of the Dickson (Tenn.) Brick Co.'s plant, died from tuberculosis of the bowels. He was 55 years of age and came to Dickson when a youth.

James Hammond, a pioneer business man of Bolivar, Pa., and one of the first to develop the fire brick industry in Westmoreland and Clearfield counties, and the organizer of the Reese-Hammond Fire Brick Co., died at his home at the advanced age of 77 years.

Lawrence Gorman, superintendent of the Kohler Brick Company, Toledo, Ohio, died suddenly at his home, 413 Dorr Street. He attended business the day before and was found dead in bed when called in the morning. He was 54 years of age and lived all his life in Toledo.

Thomas J. Robinson, a member of the firm of Robinson Bros. Brick Manufacturers, died at his residence in Garfield, Pa. He was 55 years of age.

John Potts, aged 74 years, died at his home in Pittsburgh, Pa. He came to Pittsburgh 60 years ago and was engaged at the brickmaking trade nearly all his life.

FIRE! FIRE! FIRE!

Fire destroyed the leading mill of J. P. Wilcox at Cadillac, Mich., and spread to the sheds of the brick-making plant, causing a loss of \$30,000.

The plant of the Van Honer Brick Company at Pitcairn, Pa., was damaged to the extent of \$8,000 by fire yesterday.

A one-half of mile of sheds and buildings of the National Brick Co.'s plant at Weber Station, near Rogers Park, Ill., were damaged by fire to the extent of \$7,000. Much of the machinery was damaged. It is thought that the buildings were set on fire.

DALLAS TO HAVE ANOTHER BIG INDUSTRIAL ENTERPRISE.

Another big enterprise that will have Dallas, Texas, as its headquarters was chartered at Austin and is called the Independent Press Brick & Tile company. The capital stock is \$500,000 and one-half of it is said to be already paid in. The company expects to have general offices in the Wilson building and will be officered by Dallas men, but the bulk of the capital comes from New York. One of the heaviest stockholders is a former Dallasite and now an eminent actor, Macklyn Arbuckle of Waddington, New York.

The incorporators are: W. H. Moser and J. M. King of Dallas, Daniel J. Ripley and George B. Dobson of Galveston and Macklyn Arbuckle. The charter is expected tomorrow and then officers will be chosen. Work is expected to begin within thirty days.

The company's plant will be located on a Frisco switch at Carrollton where considerable land has been bought. Mr. Moser says the shale to be used is as good as can be found anywhere. The company will manufacture face brick, building brick, hollow building tile, farm drain tile and other clay products. The daily capacity of the plant will be 125,000 bricks and, it is said, will be the largest and most complete in the southwest.

ACCIDENTS, DAMAGES AND LOSSES

The referee in bankruptcy denied the petition to harm the Holland Brick Co., Moline, Ill., bankrupt. The referee held that the company was solvent.

At the Wilson Brick & Tile Co.'s plant at New Haven, Ky., a battery of boilers blew up, completely wrecking the works, killing Puss Brown, the fireman, and fatally injuring Dolan Halbert and badly injuring four others.

J. H. Smith was almost fatally injured at the Caney (Kansas) Brick Works while applying for a job at the pit.

Edward L. White, Jr., was killed in the yards of the Salt Lake Pressed Brick Co.'s plant at Salt Lake City, Utah. He was employed to tend the temporing hopper at the machine which sprung a leak and completely buried him.

Guards at the camp of the Palmer Brick Co. at Atlanta, Ga., fired upon and killed two of three convicts that tried to get away from the camp.

Ferdinand Boucher, a North Brookfield, Mass., brick manufacturer has filed a voluntary petition in bankruptcy, liabilities \$2,093, no assets.

John Watkins, a man employed at the Row Brick Works at Newburgh, N. Y., had his hand badly injured in the machine.

High water put out the fires at the plant of the Flint Brick & Coal Co., Des Moines, Ia., and caused considerable loss and damage in that section of the country.

Floods of the rivers and creeks of Central Illinois, recently did much damage to many brick and tile plants, among them being the Geo. B. Roller and the Heckard & Son's plants at Canton, Ills.

MAGNESIA CLAY IN ITALY.

Answering a California inquiry, Consul-General Hector de Castra, of Rome, advises that magnesite and magnesia clay deposits are found in northern Italy in the province of Turin. He adds:

Italy produces annually about 1,800 tons of sulphate of magnesium, 600 tons of calcinated magnesia, and 625 tons of magnesite. The Kingdom exports some 850 tons of sulphate of magnesium and imports 950 tons of chloride of magnesium, exporting about one-half of the latter amount. The domestic production appears to suffice for the home consumption and is apt to be increased according to necessities. Italy would not seem to offer a market for similar foreign products.

THE PRISON IS TAXED BY ORDERS FROM PITTSBURG, TOPEKA AND OSAWATOMIE.

Leavenworth, Kans., July 26.—Warden Haskell has received a requisition form the State Normal school calling for 1,000,000 brick for the erection of a manual training school at Pittsburg, Kan.

There has already been \$3,000,000 ordered by the state board of control, for improvements and new buildings to be erected at the state hospitals at Osawatomie and Topeka and for the Soldeirs' Orphans' home at Atchison.

These, with what will be needed for the new road, will tax the state prison plant to the limit of its capacity, but as the warden plans to keep the supply divided among all of the users each will have enough for immediate use.

NATIONAL BRICK COMPANY THINKS INCENDIARY FIRED PLANT

Suspecting that their plant usually known as the Evanston plant, though within the Chicago limits, was burned as the result of a conspiracy, officials of the National Brick company have offered to buy incriminating information, publishing a newspaper advertisement reading as follows:

INCENDIARISM—NATIONAL BRICK Co. will pay \$1,000 reward to any person (including culprit) furnishing information which will convict instigator of setting fire to its Evanston brick plant on Friday morning last. Confidential communication can be sent to FRED WHITFIELD, attorney, Room 901, 172 Washington st.; telephone Main 1645.

From the talk of various persons interested suspicion must rest on either of two classes—labor men or some competing brick concern—and it is asserted that there has been more or less trouble with both.

B. F. Weber, president of the company, was the vice president and director of the Illinois Brick company, commonly called the trust, and Henry Busse and L. Reimer, secretary and treasurer respectively of the national concern, were directors of the trust until about three years ago, when they severed their connection with the larger concern and entered into business for themselves. They have two other plants.

From the day on which the National opened its first plant there have been more or less troublesome obstacles to overcome, and the yards at North Kedzie and West Touhy avenues, just burned, were released only two weeks ago from an engineers' strike that had been in effect for a year. All the while, officials say, there had been trouble, caused by persons placing cinders in the bearings and other parts of the operating machinery, causing its breakdown and temporary closing of the plant.

Those offering the reward say that if the culprit himself tells who caused him to set fire to the place he will in addition to receiving the reward be made exempt from prosecution.

GEORGIA POTTERIES GOING OUT OF THE JUG BUSINESS

Feeling convinced that the present legislature of Georgia controlled by Prohibitionists, will abolish the liquor traffic in this state, two of the largest potteries in the state, whose product was confined almost exclusively to jugs, closed down their establishments.

Since the legislature convened orders for more than 35,000 jugs have been canceled, and a woodworking establishment having orders for bar fixtures worth \$20,000 today received a telegram canceling them.

FOURTEEN CONCERNS NOW IN OPERATION AT WEST BAY CITY, MICH

Illustrative of the waning timber supplies in Michigan, and the tendency to seek material other than wood for building purposes, the fact that in West Bay City alone there are fourteen cement block and cement brick and tile manufacturing concerns, all of which are operating their plants full capacity every day. The combined capacity is approximately 1,000 cement blocks every ten hours, all of which are disposed of for building purposes in the surrounding district.

CHINA CLAY IN IRELAND

London, July 13.—A new industry is being developed in County Antrim, Ireland, due to the recent discovery of china clay near the village of Doagh.

The clay is said to be virtually identical in composition with that found in the famous pits of Cornwall, which have furnished the raw material for potteries all over the western world. A syndicate of Cornishmen has acquired the Irish pits. They expect in a short time to have 500 men employed in them.

WILL DEVELOP CLAY DEPOSITS

The Virginia Clay & Material Co. of Farmville, Va., is reported to have acquired more than 2,000 acres of clay-producing lands along the line of the Tidewater & Western Railroad, and is making arrangements for the erection of a brick plant to cost about \$150,000. Contracts for machinery are said to have been awarded, and engineers are at present planning the necessary structures. It is stated that the company will employ the dry press process of manufacture, and will gradually increase the capacity of its plant to 500,000 bricks per day. The company maintains an office in Richmond, Va., with Mr. A. F. Matlock, manager.

BIG CONTRACT TO RECONSTRUCT METROPOLIS

The Redding (Cal.) Brick Company has just closed a contract to furnish the San Francisco contractors with 40,000,000 brick to be used in the reconstruction of the city. In order to fulfill this contract the plant of the company will at once be enlarged and the capacity will be increased to 75,000 a day. The capacity is now 20,000.

A force of twenty-five men will be employed and the machinery of the old Alta Brick Company at Etter is being moved to the brick yards just south of this city, where it will be installed and operated by electric power.

NEW SEWER PIPE INTRODUCED

A new concrete sewer pipe is to be introduced and put on the market as soon as the machinery is received which it is necessary to use in producing the forms for the pipe's construction. This invention is designed for the construction of sewer pipes of the different standard dimensions from 30 inches up, the sizes varying in diameter as they increase in measurement every six inches.

It is manufactured in sections four feet in length, reinforced around the circumference with T iron or steel and reinforced lengthwise with twisted steel bars put into the tile so that the ends in each section lap one another and are keyed together, thereby making a permanent solid network of steel the entire length of the sewer.

The joints are so constructed that the lower half is filled from the inside of the sewer and the upper half from the outside of the pipe, making a perfect tight and sanitary joint. The makers say the tests have been made which prove the efficiency of the construction, and demonstrate that it may not only be used as sewer construction, but may be used as conveyor or transmitter of water for any desired distance.

A cold water pressure of 40 pounds has been applied to pipe 26 inches in diameter for the purpose of demonstrating the efficiency and practicability of the statement.

CLASSIFICATIONS APPLIED TO THE ENGINEERING INDUSTRIES

The Engineering Experiment Station of the University of Illinois has recently issued Bulletin No. 9, "An Extension of the Dewey Decimal System of Classification applied to the Engineering Industries." This bulletin is in effect a fifth edition of the extension previously issued by the Mechanical Engineering Department. It contains the extensions previously worked out for mechanical and railway engineering, and in addition, a very complete extension for electrical engineering, and more or less complete extensions for bridge engineering, sanitary engineering, metallurgy and architecture. An alphabetical index of subjects adds to the usefulness of the classifications.

The decimal system of classifications devised by Mr. Helvil Dewey was intended primarily for the use of librarians in classifying and arranging books and pamphlets. It has, however, been used extensively by engineers, manufacturers and business concerns for indexing technical data of all kinds, catalogs, reports, drawings, etc. Bulletin No. 9 extends the work of Mr. Dewey to practically all fields of engineering industry, and presents a system of classifications of great value to engineers and those engaged in engineering industries. Copies may be secured by application of the Director of the Engineering Experiment Station, Urbana, Illinois.

L. P. BRECKENRIDGE,
Director.

MANUFACTURING ALONG THE HUDSON RIVER TO STOP SEPTEMBER 30th

The Hudson River Brickmaker's Association held an important meeting at the Palatine Hotel, Newburg, N. Y., and the attendance was large. The Haverstraw brickmakers were represented by Daniel DeNoyelles, John Peck, George Allison, Thomas Peck and Thomas Riley. Among the others present were: William K. Hammond, of Dutchess Junction, president of the Association; Robert T. Boyd, secretary; Christian Slade, of Kingston; Robert Main, of New York; Henry Corse, of Kingston; Edwin Brockway, of Fishkill; Percival Godlen, of Catskill; Benjamin MacDonald, representing the Ulster Brick Company, and John B. Rose, of Roseton.

The brickmakers talked over the business generally, and fixed upon the time to stop manufacturing for the season.

It was the sentiment of the brickmakers that the yards should be closed for the season on September 30. It was also agreed that there should be no loading or shipping of brick boats on Fridays and Saturdays in order to relieve the Monday morning congestion. The same amount of brick will be shipped as heretofore, but instead of thirty or forty barges on Monday morning the shipments will be distributed over the week.

HAS A BIG CONTRACT FOR BRICK

"The Underhill Brick Co." Haverstraw, N. Y., says the Record and Guide, "has been notified that the McAdoo building is ready for the Croton brick, and the first shipment from the works for this operation has been made. In all about 100,000,000 Hudson River brick will be used for this building. Croton brick will be used for the fronts, and these will be furnished by the Underhill Co. to the extent of about half a million."

POTTERY NEWS ITEMS

The A. E. Hull Pottery Co., Crooksville, Ohio, has increased its capital stock from \$50,000 to \$100,000.

The Van Briggles Pottery Co., Colorado Springs, Colo., has just let a contract for a \$30,000 pottery building.

Harry L. Moar of Columbus, O., has been appointed general manager of the Zanesville, O., Tile Company.

John Donaldson will rebuild the Lone Star Pottery at Winnsboro, Texas, which was recently destroyed by fire.

The Climax Pottery Co., Crooksville, Ohio, has consolidated with the A. E. Hull Pottery Co., under the later name.

The Lewis County Pottery Co., Jane Lew, W. Va., has been incorporated to make stoneware, sewer pipe and clay products.

J. E. McClurken of Buffalo, Ky., is interested in a pottery which is to be erected at Wales, Tenn. The plant will cost \$50,000.

The Portsmouth Pottery Company, Red Fork, Ind. Ter., has been organized with \$150,000 capital stock to establish a pottery.

The Grueby Pottery Co., Boston, Mass., has been incorporated with \$30,000 capital stock by William H. Grueby, William H. Graves and H. W. Belknap.

The Greeley Pottery Co., Boston, Mass., has been incorporated with \$30,000 capital with W. H. Greeley as president, Wm. Ashmont treasurer, and W. H. Graves, secretary.

The Gem Clay Forming Co., Sebring, Ohio, has been incorporated with \$10,000 capital stock. The stockholders are B. H. Greene, S. W. Greene, E. C. Albright, H. D. Weaver and M. Weaver.

The Cuba (Miss.) Brick & Pottery Co. has just received an order for eight cars of pottery in which they have commenced work. Experiments in making white-ware have been successful.

B. F. Harker, superintendent of the Homer Laughlin China Co., at Newell, W. Va., has resigned and Joshua Poole succeeds him. Mr. Harker contemplates a trip to Europe before resuming active work.

At the annual meeting of the Onondaga Pottery Co., Syracuse, N. Y., old officers were re-elected. E. B. Judson is president, James Pass, vice president, C. D. Avery, secretary and Geo. M. Williams, treasurer.

THE ALEDO BRICK COMPANY WILL ENLARGE

The Aledo (Ills.) Brick & Tile Company are preparing to install a \$1,800 crushing machine at their plant. The purpose of this powerful mechanism is to grind to a dust every particle of rock, stone and gravel in the clay with the intention of manufacturing a glazed building brick. The company is adding new kilns to their yard and their machinery is turning out 25,000 brick a day. The Gillett Doorless, Grateless Firebox is being used in the kilns and a new record for burning brick was recently made when a large kiln of hard glazed brick was burned in forty-eight hours. Only twenty tons of coal was used. The company is having a big run of tile. A large number of land owners will lay tile this fall.

SAND OR LIME BRICK OR BLOCK NEWS

The American Sand-Lime Brick Co., 77 Jackson Boul., Chicago, are shipping a complete plant to Georgia.

The Cline Engineering Co., Cleveland, Ohio, is planning and organizing a company to make sand-lime brick at Auburndale, Fla.

The North Dakota Tile Works, Fargo, N. Dak., located on East Front St., is now doing a rushing business. They manufacture cement tile.

The Camden Pressed Brick Company has been incorporated at Camden, N. J., to make sand-lime brick. The capital stock of the company is \$25,000.

W. D. Hitchcock of the Denver (Colo.) Pressed Brick Co., was in Chicago making purchases of brick machinery. He also visited the Jamestown Exposition.

Wick & Serum, Jackson, Minn., have purchased land and will build a cement, brick and tile works. New machinery has been ordered and the plant will be running in good order before fall.

The sand-lime brick works at Denver and Colorado Springs, Colo., are having a fine trade. In Denver, buildings and residences costing from \$50,000 to \$250,000, are being erected out of sand-lime brick.

The Denbigh (N. Dak.) Brick Co. have started up their sand-lime brick plant and are operating it night and day. They cannot supply the demand. The plant was installed by the American Sand-Lime Brick Co. of Chicago.

The Luverne (Minn.) Pressed Brick Co. have bought the plant of the Memphis (Tenn.) Granite Brick Co. and are removing same to Luverne. W. E. E. Green is the secretary of the company, and George Delate is also interested.

The Ideal Concrete Machinery Company, South Bend, Ind., have issued their July number of "Idealite," which is quite newsy and instructive. They have a prize competition of \$260 in it for the best and most artistic construction built of Ideal concrete blocks.

The Kansas City (Mo.) Gray Brick Company is looking for a site to build a sand-lime brick plant at Buffalo that will cost \$200,000. The company already has a plant at Bonner Springs, Kansas. B. N. Soper of Kansas City is the secretary and treasurer of the company.

B. F. Weaver has sued the Silex Brick Company at Wichita, Kansas, for \$3,500 damages for being struck in the nose and face by the lever of the brick press while assisting in making repairs. He wants \$2,500 for damages done to his face and \$1,000 for the pain he suffered.

The Intermountain Cement & Brick Co., Salt Lake City, Utah, has been incorporated with \$250,000 capital stock. John O. Sharp is president, T. R. Butler, Jr., vice president, and J. P. Sharp, secretary-treasurer. The plant will be located at Sugar City, Idaho, and will manufacture sand-lime brick.

The sand-lime brick plant at El Paso, Texas, is now turning out 50,000 brick daily. The plant is located on the G. H. & S. A. Rys at Dallas St., and 25 men are steadily employed. F. B. Stuart is president and general manager; A. Courchesne, vice president, and S. H. Sutherland, secretary and treasurer. W. F. Barnes of San Francisco, Cal., is one of the directors. The Schwarz system is used.

MISCELLANEOUS ITEMS

David Douglas will start a brick yard near the Lake View Cemetery at Eau Claire, Wis.

H. B. Fox, of Urbana, Ill., has taken a position with the Monmouth (Ill.) Brick Co., as an expert clayworker.

It has been officially announced that the Reece-Hammond Fire Brick Co.'s plant at Bolivar, Pa., will resume operations.

The new brick plant at Aberdeen, S. Dak., operated by Martin & Fish, has begun operations at the yard near the packinghouse.

Supt. A. S. Paine of the New England Brick Co. states that ten million more brick have been manufactured than last year at this time.

The New Birmingham Brick Co., Rusk, Texas, has been organized with \$50,000 capital stock, by A. S. Busby, J. S. Wrightman and W. B. Neeley.

The San Angelo (Tex.) Brick Co. has been incorporated with \$20,000 capital stock. Incorporators are C. H. Powell, Fred Beck and A. Balfanz.

The Unit Brick & Tile Co., Charlotte, N. C., will build their third factory at N. Smith and Tenth Sts. Paul Chatham is president of the company.

The Rives (Tenn.) Tile Co. has been incorporated with \$10,000 capital stock by W. C. Ferris, B. J. Wade, J. B. Caudel, W. M. Fox and D. H. Woody.

The Consolidated Brick & Tile Co., Price Hill, N. C., expects to increase the capacity of its plant this fall and will make sewer pipe, drain tile and terre cotta.

Payson Rich, of Gilbertsville, Maine, has purchased the brick plant on the Polar corner road near Mechanic Falls, of the Waterhouse heirs and will operate same.

The United Brick & Sand Co., Camden, N. J., has been organized with \$125,000 capital stock. Incorporators are A. L. Colver, John N. Colver and Peter Lemon.

Alexander Lindsay has sold his interest in the Fairmount (Ind.) Tile Co. to L. C. Lillard of Marion, who has taken possession and will enlarge and improve the plant.

The Daniel Goff Co., Millville, N. J., has been incorporated with \$50,000 to operate a sand, gravel and clay pit. Incorporators are Daniel Goff, R. M. Goff and E. P. Counsellor.

The Home Pressed Brick & Tile Co., Oakland, Cal., has been incorporated with \$100,000 capital stock by W. S. Cook, W. G. Johnson, Frank L. Dennis, E. Z. Ingram and J. W. Burnette.

The Hanover (O.) Red Pressed Brick Co. is to be reorganized and the money received will be used to enlarge the plant so as to supply the product promptly. C. H. Forry is the manager.

The Virginia Clay & Material Co., Farmville, Va., has purchased 2,000 acres of clay lands. Contracts for machinery has been awarded and engineers are preparing plans for the buildings. A. F. Matlock is the manager.

The Fayette Brick & Supply Co., Lexington, Ky., established by Greening & Frye, has changed hands and Charles Mc Connaghy, of the Monticello City National Bank, owns the majority of the stock. A. P. Stone of Monticello will manage it. The capacity will be doubled and pressed brick machinery added.

The Dallas (Texas) Hydraulic Brick Co. has been incorporated with \$5,000 capital stock.

Straight Bros., of Fonda, Ia., have completed plans for a new \$75,000 tile factory at Adel, Iowa.

The Bippus (Ind.) Drain Tile Co. is adding two new kilns to its plant which was made necessary to keep up with the demand.

The Great Western Brick Co., an auxiliary of the Great Western Lumber Co., Point Richmond, Cal., has begun operations in its new plant.

W. G. Bower of Vermillion, has shipped his brick making outfit to Pierre, S. Dak., and formed a partnership with A. W. Ewert of Pierre, and will manufacture brick.

The Liberty (Kansas) Shale Brick Co. has been organized with \$25,000 capital stock, and will erect a plant just north of town. Construction work will begin at once.

The Owensboro (Ky.) Brick Co. has been incorporated with \$100,000 capital stock. Incorporators are R. P. Farnsworth of Henderson; W. W. Farnsworth and J. W. McCulloch of Owensboro.

At a meeting of the stockholders of the Elk Fire Brick Co. at St. Marys, Pa., it was decided to greatly enlarge the plant, which was found necessary because of the increasing demand for the company's product.

The real estate of the Old Washington (D. C.) Brick Co., at Florida and Fifteenth streets, Northwest, comprising 55 acres has been sold to John Miller and will be subdivided and 200 houses built upon it at once. The consideration was \$150,000.

The Winterset (Ia.) Brick, Tile & Material Co. has been incorporated with \$10,000 capital stock.

G. E. Carlyle, of Portsmouth, O., who promoted the two Olive Hill (Ky.) Fire Brick companies, is promoting the third one for that town.

Robert Klose, Beatrice, Nebr., recently stated that their plant was very busy and says new machinery is to be installed and buildings built.

The Morris (Manitoba) Brick Mfg. Co. has been incorporated with \$20,000 capital stock. Directors are F. Mackenzie, W. M. Galbraith and J. M. Philips.

The Columbus (O.) & Hocking Coal & Iron Co. is considering the advisability of awarding the contract of mining the clay to be used in the new plant at Kachelmacher.

The Winfield (Kansas) Construction Co. has been incorporated by B. H. Albright, J. N. Shackelton, James Lorton, F. M. Benson and S. I. Pois, to build brick plants, operate stone quarries, etc.

The Porous Hollow Tile Co., New York, has been incorporated with \$20,000 capital stock by A. C. Hinton, of Grand View-on-the-Hudson; Allen Dunn, North Bergen, and T. K. Christie, New York.

The Acme Co., Ltd., Winnipeg, Manitoba, has been incorporated with \$100,000 capital stock to manufacture brick, tile and sewer pipe. The directors include J. Erzinger, Louis Serkan and A. D. Sproule.

Geo. S. Wheatley, manager of the Stockton (Cal.) Fire and Enamel Brick Co., which is now building a larger plant near the Pacific Window Glass Works, states that the plant will turn out its first batch of brick in September.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

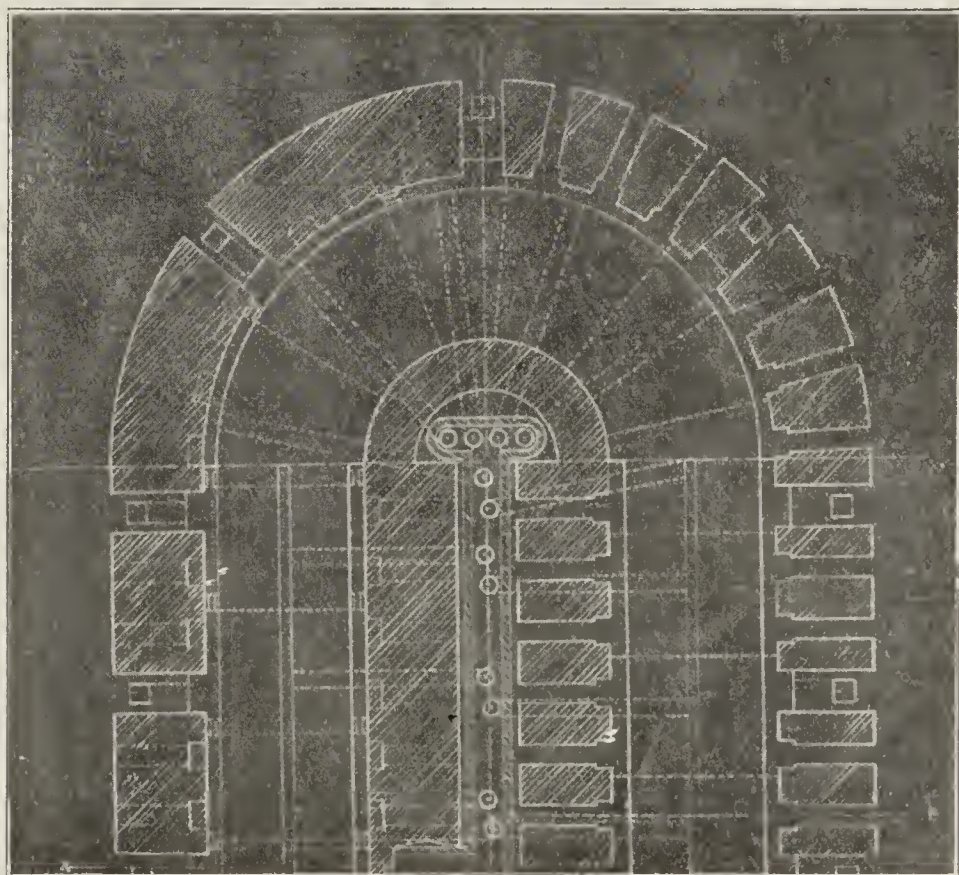
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

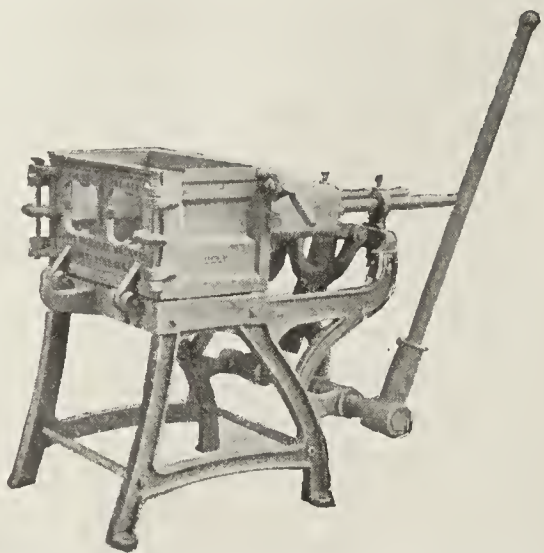
Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

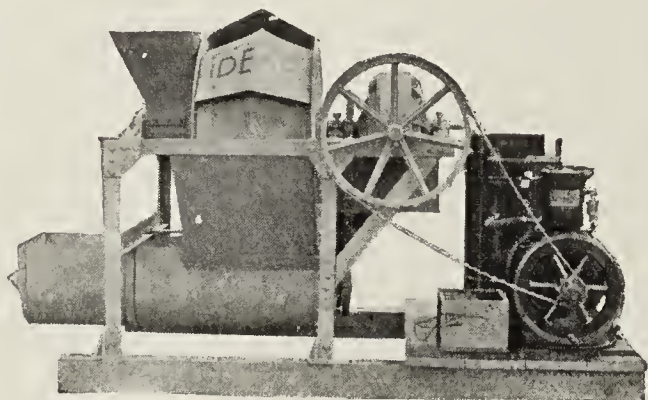
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



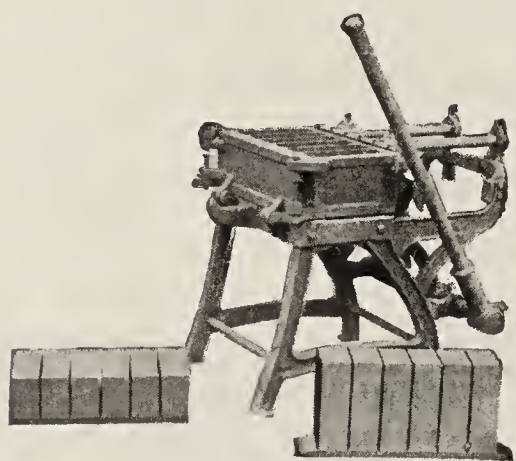
WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.



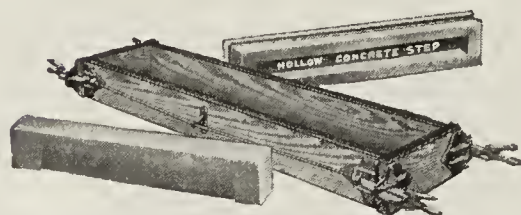
Model A--Ideal Concrete Block Machine



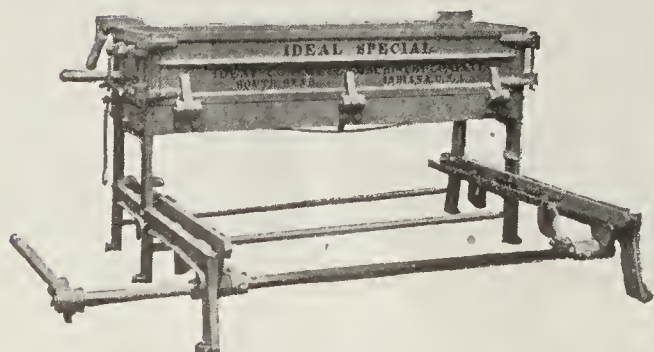
Ideal Concrete Mixer



Ideal Concrete Brick Machine



Ideal Cement Sill Mould



Ideal Special Sill and Lintel Machine

IDEAL CONCRETE MACHINERY CO.

Manufacturers of
"Ideal" Concrete Machinery

Block Machines, 16 to 24 in. lengths
(Interchangeable)

Brick Machines, Mixers
Sill and Lintel Machines
Pier and Column Moulds
Step, Sidewalk and Sill Moulds
Ornamental Moulds for
Shafts, Capitals, Vases, etc.

Largest exclusive manufacturers of Concrete Machinery in the world. Originators of the "down face" horizontal core concrete Block Machine: Model "A," 16 inch; Model "E," 24 inch. Machines are interchangeable to 8, 10 or 12 inch widths, and produce whole or solid blocks in full or fractional sizes, within capacity.

Manufacturers of the IDEAL Sill and Lintel Machine, IDEAL Continuous Batch Mixer, IDEAL Cement Brick Machine, IDEAL Sill and Cap Molds, IDEAL Cement Step Molds, IDEAL Sidewalk Molds, IDEAL Ornamental Column Molds with Ionic or Doric Capitals, IDEAL Ornamental Spindle Molds, Porch Column Block Molds, Concrete Lawn Vases, Fancy Belt Courses, Ornamental Caps, Ornamental Ball Molds, and everything in regular and special designs.

More than *two thousand* of our Block Machines alone are being operated in the United States. Exclusively used by all up-to-date manufacturing plants. Importing houses of reputation and reliability are "IDEAL" agents in every country on earth. Largest exporters of concrete block machinery in the United States.

Write for Catalogue. Magnificently illustrated: Shows gross and net weights of all machinery and supplies; gives weights and cubic measurements of materials. Tells how to make exact calculations of cost of manufacture of Ideal Concrete Blocks in any locality. The most comprehensive encyclopedia on concrete machinery and its allied interests ever published. Sent free on application.

Ideal Concrete Machinery Co.

Dep't W South Bend, Indiana, U. S. A.
Mussens Limited, Montreal, Canada Sole Agents for Canada

The plant of the Cobb Bros. Brick Co., southeast of Fort Worth, Texas, is ready to be started this week.

The Salina (Kansas) Vitriified Brick Co. has purchased additional machinery and will put in a new line of down-draft kilns.

Whitney & Holcomb's brick works at Caldwell, Idaho, is doing a rushing business. 600,000 brick are at present contracted for.

The Sheffield (Ia.) Brick & Tile Co. has been organized by E. J. Smith, pres.; L. B. Carhart, C. C. Carhart, G. E. for a large plant.

The Willmar (Minn.) Brick Co. is putting in permanent kilns, instead of their old-fashioned kilns, also are putting in drying sheds.

The Weir City (Kansas) Brick Co., which has been under construction since spring, is now turning out brick at the rate of 60,000 daily.

The Panama Portland Cement & Development Co., C. C. Godfrey, secretary, Batavia, N. Y., wants estimates for a cement plant to be erected in Alabama.

Harland & Kuester of Chicago, will put in a brick yard at Fort Pierre, S. Dak. The machinery for the plant has been shipped. 60,000 brick daily will be made.

The American Clay Products Co., Roanoke, Ill., will use a large tent under which to dry their tile during the summer months, instead of using their steam drying room.

John Diller, for 14 years superintendent of the Decatur (Ill.) Brick Co., has resigned his position and accepted a similar one with the Chanute (Kansas) Brick & Tile Co.

The Billings (Mont.) Pressed Brick & Tile Co. has been incorporated with \$50,000 capital stock by W. A. Talmage, Winter, and others. Work on the construction of the plant is under way.

The Norton Silica Brick Co., Norton, Virginia, have placed their order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a "Martin" Improved 9-ft. Wet Pan.

A strong company of local capitalists has been organized at Edmonton, Alta, Can., to manufacture brick under the Berco process, which is owned by Anton Berg Sons, Manning Chambers, Toronto, Ontario.

The Maine Clay Products Co., of Thomaston, Maine, have placed their order with the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., for a complete equipment for the manufacture of soft mud brick.

Deeds transferring 150 acres of ground has been made to the Evans & Howard Fire Brick Co., St. Louis, Mo. The company will erect a new plant on part of this land, which is at Clayton. About 200 acres have been bought at prices between \$350 and \$1,000 an acre.

Geo. H. and Edward K. Uhler, Marion, Ohio, are considering the developing, on a large scale, the clay lands on Frank Church and A. Bonnot, and has bought machinery the Uhler farm, which have been tested and found to be exceptionally good for sewerpipe and brick.

The Schmitt Brick Co., Columbus, O., who lately installed the "Martin" Patented Rack Pipe Steam Brick Dryer System, of 30,000 daily capacity, are now putting in additional 20,000 capacity "Martin" Dryers, installed by the Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa.

L. L. Bingham of Esterville, Ia., is considering the putting in of tile plant at Terril.

W. E. Thompson of Macomb, Ill., is making tests of clay at Pittsfield, and a \$20,000 plant is possible.

Henry Edelmaier of Hooper, Neb., has bought the Schribner (Neb.) Brick Mfg. Co. and taken possession.

The Keysville (Utah) Brick Co., 161 Main street, Salt Lake City, has increased its capital stock from \$50,000 to \$100,000.

The Cooleemee (N. C.) Brick Co. has been incorporated with \$25,000 capital stock, by J. D. Gains, J. A. Tritts, A. B. Byerly and H. H. Davis.

The Rusk (Texas) Iron Co. wants estimates on the machinery for a 1,200-barrel Portland cement plant. W. H. Oatley is secretary of the company.

The Red Fork (Ind. T.) Brick Co. has been organized with \$100,000 capital stock by W. W. Hackett, president and general manager, and J. R. Ewing.

The machinery for the Baldwin County Brick & Pottery Co., near Milledgeville, Ga., has been bought, and M. M. Minter will be placed in charge of the plant.

The Green & Hunter Brick Co., Thurber, Texas, has amended its charter and changed its name to the Thurber Brick Co. The main office is at Fort Worth.

The Frost Mining Co., Jonesboro, Ill., has been incorporated with \$2,000 to mine clay and silica. Incorporators are S. B. Frost, O. D. Frost and Ursula Frost.

The Guthrie (Ky.) Brick & Tile Mfg. Co. has been incorporated with \$3,000 capital stock. The incorporators are Dr. J. M. Robinson, J. E. Leake and R. F. Warren.

DIRECT HEAT

DRYERS

FOR

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,

62-64 William St.

NEW YORK CITY

BRICK PLANT FOR SALE

Brick Plant on three railroads, within two blocks of paved streets, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg. Springfield, Illinois

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

A MANUFACTURING PROPOSITION

We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only a small investment, and you have exclusive territory protected by patents.

Egyptian Sheet Plaster Co.
Jackson, Mich.

BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.

Address: "Manager" Care of Clay Record
Chicago, Illinois

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enameled Brick & Tile Co.
1 Madison Ave. New York

FOR SALE

Modern Soft Mud Plant, city 12,000, good business, good prices, abundance of clay and sand. Address, WM. M. REED, Princeton; Ind.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.
39 Cortland St., New York.

50 PERCENT SAND

Fifth percent sand on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
131 Lander St., Newburgh, N. Y.

PLANT FOR SALE

A first-class tile and brick plant in best part of Iowa. Capacity 15000 brick or tile in proportion. Reason for selling, age. For particulars write to H. L. SWIFT, Riverside, Iowa

A GOOD INVESTMENT

Man with capital and experience to start Brick & Tile plant. Good clay, good location adjoining R. R. track. Large home demand for tile. For particulars write

Box 73, OKABENA, MINN.

FOR SALE

For Sale—75 Acres; 60 feet of Shale, 10 feet of Fire Clay, 3 feet of Coal developed. Excellent conditions. Railroad track. Price, \$15,000. Address.

NEW CENTRAL COAL CO.
Terre Haute, Ind.

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
Leesville, La.

WANTED

Wanted Stoneware Potter—both wheel and Kiln men. Write to SPOKANE POTTERY CO. Clayton, Wash.

FOR SALE

Two complete sets Brick-making Machinery, including Chambers Brick Machine, Elevators, Clay Rolls, Granulators, Hoists, etc., also one Frey-Sheckler Brick Machine, at present in operation.

ILLINOIS BRICK CO.
Chicago, Ill.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,

Care Clay Record, Chicago, Ill.

MEN WANTED

Three (3) or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address:

Supt. Missouri Slope Brick and Tile Co.
Dickinson, N. D.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$35.00.

C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
Redfield, So. Dak.

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PARTNER WANTED

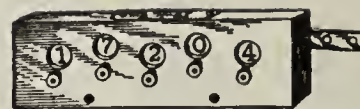
A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Jiggers quoted.
R. A. HART, 41 White St.

No better made, cut from \$8 and \$10, to 4 Wheel, \$3.00 5 Wheel, \$3.25 Guaranteed. Sold by all dealers BATTLE CREEK, MICH.

MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co. Pittsburg, Pa. Salineville, Ohio.

MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make A1 brick; understand machinery; good business ability; the management of men; have unquestionable habits; first class reference. Address in full and in confidence stating salary expected. X. Y. Z. Care Clay Record, Chicago, Illinois

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.

BAKER IRON WORKS
Los Angeles, Cal.

FOR SALE

A good Road Machinery Co.'s make, No. 4 Champion Crusher, in perfect condition; very little used; no reasonable offer refused.

OHIO CLAY PRODUCTS CO.
605 Diamond Bank Bldg.,
Pittsburg, Pa.

FOREMAN WANTED

Wanted a general Foreman for a No. 1 fire brick and farm Drain Tile Plant located in the Mississippi Valley. Must be sober, up-to-date and a hustler. Good wages to right party. Address:

"F. T." GERMAN INSURANCE AGENCY
Rock Island, Illinois

FOR SALE

Startling sacrifice—Completely equipped ornamental brick plant, excellent quality clay, on Baltimore & Ohio Railroad in Ohio, has been bonded for \$80,000.00; for sale unencumbered for \$10,000.00 cash. Address:

E. E. SLOCUM
141 Broadway, New York

BRICK PLANT WANTED

At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacents, Plenty of artesian water. For information address:

WENONA COAL COMPANY
Wenona, Illinois

DO YOU WANT TO SELL YOUR BUSINESS?

DO YOU WANT TO EXCHANGE PROPERTIES? DO YOU WANT TO BUY A BUSINESS?

If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address FRANK P. CLEVELAND,
1726 Adams Express Building
Chicago, Illinois

FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.
Sandusky, Ohio

FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash

POSITION WANTED

By an experienced Potter as Superintendent on turning, glazing, kiln cutting or burning.

Address: N. Z. care of Clay Record
Chicago, Ill.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

79 Chamber of Commerce,
Astoria, Oregon



Vol. XXXI. No. 3.

CHICAGO, AUGUST 15, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cents

A BRICK IS A BRICK, AND A UNIFORM RATE MUST BE CHARGED

An important decision has been rendered by the United States Commerce Commission in a case in which the Stowe-Fuller Co., Cleveland, O., was plaintiff and the Pennsylvania R. R. Co., the Pennsylvania Co. and the B. & O. R. R. Co. were defendants. Its significance is discussed editorially in this issue. The decision was as follows:

1. Complaint in this case was directed solely against present differences in defendants' rates on fire, building and paving brick from Empire, Strasburg and other points in Ohio to New York city and other eastern destinations, but no attack was made upon the reasonableness of the rates on either kind of brick except as involved in the claim that any difference in the rates for the different kinds is lawful; Held, Upon the facts and circumstances of the case, that no such distinction between these three classes of brick, which are made of the same material, come out of the same kiln are nearly alike in color, and are of the same size and weight, exists as justifies a difference in rates. To hold otherwise would be to promote false billing by the shippers and to require carriers to make a practically impossible examination into the use of which each shipment of these brick was put.

2. Classification must be based upon a real distinction from a transportation standpoint. Aside from the difficulty in learning what use the brick were to be put to upon reaching their destination, the commission can not regard a classification as scientific, or a difference in rates as well based, which is altogether founded upon a distinction that has no transportation significance. Such a differentiation, if permitted and extended throughout the various classes of freight, would lead to an almost endless multiplication of rates, which could find no excuse save the use which might be made of the article transported.

The report of Mr. Lane, for the commission, follows:

REPORT AND ORDER OF THE COMMISSION

The complaint herein is directed solely against the present differences in rates charged by defendants on fire, build-

ing and paving brick from Empire, Strasburg and other shipping points in Ohio to New York and other eastern destinations, and the complaint is based upon the contention that for transportation purposes the three descriptions of brick constitute like traffic and should take the same rate. No attack is made upon the reasonableness of the rates on either kind of brick except as involved in the claim that any difference in the rates for the different kinds is unlawful.

Complainant owns or controls five plants for the manufacture of brick out of fire clay, one at Strasburg, O., on the Baltimore & Ohio railroad; one at Empire, O., on the Pennsylvania Co.'s line; one at Olive Hill, Ky., on the Chesapeake & Ohio railway, and one at Lock Haven, Pa., and one at Alexandria, Pa., both on the Pennsylvania railroad. It also purchases brick from other plants. It handled in 1906 about 80,000,000 brick, of which 60,000,000 were of its own production. Complainant is stated in testimony to be the second largest shipper of brick in the United States. The points of shipment mainly involved in the testimony are Empire and Strasburg, in Ohio.

The rates from Empire and Strasburg to New York are based upon the brick rates from Chicago to New York, as indicated in the following history of the rates on eastbound shipments: It appears that about the year 1897 the rate on all brick from Chicago eastbound was 20 cents. This was raised later to 25 cents, Jan. 1, 1900. Very shortly afterwards, upon representation of the paving-brick shippers, the rate on paving brick was reduced 2½ cents, and in May, 1900, those shipping building brick having been heard from, the scale from Chicago was made—fire brick, 25 cents; building brick, 22½ cents, and paving brick, 20 cents. About a month later the rate of 22½ cents was made to apply on both building and paving brick. In September, 1904, about four years later, the rates were made 25 cents on fire brick and 20 cents on both building and paving brick.

Strasburg, O., takes 70 per cent of Chicago-New York rates, and the rates from that point to New York are, therefore, 17½ cents on fire brick and 14 cents on building and paving brick. Empire, O., takes the 60 per cent basis, but

the Pennsylvania system fixes the rates from that territory on the basis of 22½ cents from Chicago, and the rates from Empire to New York are therefore 15 cents for fire brick, 13½ cents for building brick, and 12 cents for paving brick. A similar relation exists on eastbound shipments from other shipping territory on the Pennsylvania lines in Ohio and Pennsylvania for the three grades of brick shipped to eastern destinations. The complainant has been protesting to the carriers against the application of different rates on these grades of brick for several years.

The rates westbound are on a lower basis and are the same for brick of all descriptions; that is to say, from Pennsylvania brick-making points to all points in Central Freight Association territory the three kinds of brick take the same rate, and that rate is lower than the rate eastbound between the same points. From Williamsport, Pa., a brick-manufacturing point, the rate westbound to Canal Dover (near Strasburg), O., is \$1.75 per ton (8¾ cents per 100 pounds), while the rate from Canal Dover to Williamsport is \$3.10 per ton, or 15½ cents per 100 pounds.

The defense claims that the \$3.10 eastbound rate extends east as far as Philadelphia, while the westbound rate from Williamsport applies from a group of which Clearfield may be taken to be the most westerly point of shipment, and that the comparison is unfair. However this may be, the fact remains that as between Canal Dover and Williamsport the westbound rates on all grades is \$1.35 per ton (6¾ cents per 100 pounds) less than the rate on fire brick eastbound.

The rates between points in Central Freight Association territory, which is the transportation territory west of Pittsburgh and Buffalo and east of the Mississippi river, are generally the same for the three grades, but to this there are exceptions, some of which are shown in the accompanying table:

To—	From—			From—			From—		
	Empire, Ohio, via Penna. Co.			Strasburg, Ohio, via B. & O.			Portsmouth, Ohio, via N. & W.		
	Face			Face			Face		
	Fire.	build- ing.	Pav.	Fire.	build- ing.	Pav.	Fire.	build- ing.	Pav.
Chicago, Ill.	\$2.20	\$1.70	\$1.70	\$2.00	\$1.50	\$1.50	\$2.00	\$1.50	\$1.50
Cleveland, Ohio ...	.95	.25	.95	.65	.65	.65	1.40	1.40	1.30
Cincinnati, Ohio ...	1.60	1.60	1.45	1.50	1.50	1.20	1.00	1.00	.90
Toledo, Ohio	1.40	1.40	1.10	1.20	1.05	.90	1.45	1.45	1.05
Detroit, Mich.	1.80	1.80	1.40	1.60	1.30	1.20	1.75	1.45	1.35
Evansville, Ind. ...	2.80	2.80		2.60	2.60	2.15	2.50	2.50	2.05
Indianapolis, Ind. ...	1.90	1.90	1.45	1.70	1.70	1.25	1.70	1.70	1.25
Peoria, Ill.	2.65	2.65	1.95	2.45	2.45	1.75	2.45	2.45	1.75
E. St. Louis, Ill. ...	2.90	2.70	2.35	2.70	2.50	2.15	2.60	2.50	2.05
St. Louis, Mo.	3.10	2.90	2.55	2.80	2.60	2.25	2.80	2.70	2.25

a. Paving-brick rates from Strasburg—rates given are from Canton district. Tariffs do not specifically name Strasburg.

b. Face building brick from Portsmouth—except to Chicago, Detroit, East St. Louis, and St. Louis no specific rates in force on building brick shown in tariffs, and fire-brick rates are used.

From certain groups in Pennsylvania to points in territory known as Buffalo-Rochester territory the rates via the Pennsylvania lines are the same, and the testimony indicates that the differing rates apply on shipments to Buffalo-Rochester territory from Empire and Strasburg. The westbound rate from Pennsylvania brick industries to Cen-

tral Freight Association territory is made by adding certain arbitraries to the rate from Pittsburgh. Johnstown, Pa., for example, takes an arbitrary of 50 cents per ton above Pittsburgh. Eastbound the Johnstown rate is 30 cents below the rate to Pittsburgh.

The brick in question are all made from fire clay, which, when used for brick making, is composed of a kind of clay rock ground and mixed with soft clay, both of which are found in the same localities at numerous points in Ohio and Pennsylvania and at one or more places in New Jersey. All three kinds of brick are composed of the same material, and may be, and often are, burned at the same time in the same kiln. The hottest part of the kiln produces paving brick, the medium burned are building brick, and those layers subjected to least heat are fire brick. Under present rates and commercial and manufacturing conditions pertaining to brick manufactured in Pennsylvania, the percentage moving west is much larger than the percentage of Ohio brick moving east. The westbound movement of Pennsylvania brick is estimated at 40 per cent and the eastbound movement of Ohio brick is stated to be approximately 15 per cent. The various plants compete for the eastern and western trade.

The brick for each grade is generally the ordinary 9-inch brick of commerce, but paving brick for street use often take the block size, and fancy building brick may be much longer and wider but not so thick. But for the purposes of this report fire, building and paving brick may be taken as of the same size. The weight of each kind is 7 pounds or 3½ tons to the thousand. Shipments fill the car to the maximum load of 10 per cent above marked capacity. The carrier, therefore, renders exactly the same service whether fire, building or paving brick is shipped in carloads between the same points.

Complainant's fire brick ranges in value about as low as, if not lower than, its building or paving brick, taking all of its sales into account, but an extract from a report of the Geological Survey, put in evidence by the defense, shows that a general value of fire brick is somewhat in excess of the value of building brick, and that the latter slightly exceeds the value of the brick used for paving. In view of the policy of the defendants themselves in making the same rates for all kinds on westbound shipments, which practice also obtains in most instances throughout the central west and in shipments to the south, the difference in value can hardly be said to furnish a basis on which to predicate a difference in rates. The practice of invariably making different rates on the three classes of brick seems to be confined to shipments into and between points in Trunk Line territory, and to this there is the exception above noted from Pennsylvania railroad points in Pennsylvania to Buffalo-Rochester, N. Y., territory.

It is entirely practicable to use fire brick for cheap building purposes and building or paving brick for fire-brick use, and instances have occurred where one kind has been purchased or sold to be used instead of another kind, and where fire brick shipped as for building use have really been used

as fire brick, thus evading payment of the higher rate. Although interchangeable, each is usually confined to the individual use indicated by the name.

It may be fairly said in conclusion that the carriers in this case show no sufficient justification whatsoever for discriminating between the three kinds of fire-clay brick involved in this proceeding. The brick themselves are so nearly alike in color that, being the same size and of the same weight, they are practically indistinguishable the one from the other. To make different rates on each of these brick is virtually to permit the shipper to declare which of the three rates he chooses to impose upon the freight. The receiving agent of the railroad, unless an expert in fire-clay brick, could not tell which of the three rates to impose upon any one of the three varieties, except by inquiring what use was to be made of these brick. Aside from the difficulty in learning what use the brick were to be put to upon reaching their destination, we can not regard a classification as scientific, or a difference in rates as well based, which is altogether founded upon a distinction that has no transportation significance.

Moreover, such a differentiation, if permitted and extended throughout the various classes of freight handled by railroads, would lead to an almost endless multiplication of rates, which could find no excuse save in the use which might be made of the article transported. One class of lumber of the same measurement and of the same value and of the same general appearance and of the same weight as another might be given a distinct and separate rate. And so with building stone and cement and steel in certain forms, and many other commodities which will readily suggest themselves. Classification must be based upon a real distinction from a transportation standpoint, and we can find no such distinction between these three classes of brick, which are made of the same material and come out of the same kiln, as justifies a difference in rates. To hold otherwise would be to promote false billing on the part of the shippers, and to require the carriers, if they would avoid the penalty of the law, to make a practically impossible examination into the use to which each shipment of these brick was put.

We are not asked in this proceeding to determine what rate may be imposed as a reasonable one, and therefore shall leave this matter to be adjusted by the carriers, subject to review upon complaint by this commission.

It will be ordered that the fire brick, building brick and paving brick made of fire clay and here considered shall, as to the points herein involved and as to the defendant carriers, bear the same rate. Upon the foregoing report—

ORDER.

It is ordered, That the defendants, the Pennsylvania Co., the Pennsylvania Railroad Co., and the Baltimore & Ohio Railroad Co., be, and they severally are, hereby notified and required to cease and desist on or before the 15th day of August, 1907, and during a period of at least two years thereafter abstain, from their present practice of charging and enforcing rates, from Empire on the line of the defendant, the Pennsylvania Co., or Strasburg on the line of the

defendant, the Baltimore & Ohio Railroad Co., or from other points on their lines in the state of Ohio, to points in the states of New York and Pennsylvania which, from any of said points of shipment to any of said destinations, are different for the transportation of fire brick, building brick and paving brick made from fire clay and of the ordinary 9-inch size known to commerce; and to publish and charge, on or before said 15th day of August, 1907, and during a period of at least two years thereafter, the same rates from each of said points of shipment to each of said points of destination on shipments of fire brick, building brick and paving brick described as aforesaid; and said defendants are hereby authorized to make said rates effective upon three days' notice to the public and the commission, given in the manner required by law, the tariff containing notation that it is issued under this authority.

PROFESSOR W. F. M. GOSS OF PURDUE UNIVERSITY ACCEPTS AN IMPORTANT CHAIR AT THE UNIVERSITY OF ILLINOIS

Professor William Freeman Myrick Goss, who has just accepted the position of Dean of the College of Engineering of the University of Illinois is an engineer well and widely known both in the educational world as well as in the field of scientific and practical engineering.

Professor Goss was born in Massachusetts in 1859 and received his certificate of graduation from the Massachusetts Institute of Technology in 1879. He received the degree of Master of Science from Wabash College in 1884 and the honorary degree of Doctor of Engineering was conferred upon him by the University of Illinois in 1904.

In 1879 he was called to Purdue University to organize there the department of practical mechanics. Since 1890 he has been Dean of the Schools of Engineering and Director of the Engineering Laboratory at Purdue. As a result of his successful work at that institution he has become recognized as an authority on many aspects of the steam engine and has won for himself an international reputation in the field of railway engineering. He is a member of the leading engineering and technical societies of the United States and is the author of several engineering books and various monographs of a scientific nature.

Professor Goss is to take up his work at the University of Illinois September first and will be Dean of the College of Engineering and Director of the School of Railway Engineering. This school is a newly organized one and the University intends to develop in it a complete and comprehensive scheme of training for the railway service, including railway organization and operation as well as railway engineering. The four following professorships have thus far been established; that of railway civil engineering; railway mechanical engineering; railway electrical engineering; and railway administration. Professor Goss will direct and develop this school as a part of the college of Engineering and will do much towards making this college of the University of Illinois the finest technical school in the United States.

A paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February, 4-9, 1907.

BURNING BUILDING BRICK IN CONTINUOUS KILNS WITH PRODUCER GAS

BY C. G. GUIGNARD, COLUMBIA, S. C.

The subjects, "The Value of Producer Gas to the Brick Industry," and "Producer Gas as a Solution of the Brick Maker's Fuel Problem," were thoroughly presented and discussed at the convention in Philadelphia last year.

To those who are interested in this most important of subjects to the brick manufacturer at this time, and who did not have the privilege of attending that interesting gathering, or who have not read the proceedings, I would suggest that they refer to the records and see if they cannot find some instructive matter there.

Following those interesting papers of last year's meeting, our Secretary has asked me to give a short paper at this meeting on "Burning Building Brick in Continuous Kilns with Producer Gas," as gathered from my own experience as one of the pioneers in this country in this method of firing continuous kilns.

What I shall have to say will be purely from a practical point of view, or relating my own experience. In the first place, I am not competent to treat this subject from a scientific point of view, and in the second place, the subjects have already been so treated before this convention in papers above referred to.

The fuel bill is a serious problem with every brick maker unless he is so fortunate as to own his own coal mine or his own gas well. Like most all the members of this Association, I am not one of those fortunate ones.

We make common building brick, and ours is a red burning clay requiring above the average temperature for proper burning. This is evidenced by comparison with numbers of sample brick, of red burning clay, from various places, including Massachusetts, Canada and Utah, burned in our kilns. In almost every case when our brick, surrounding the samples, were just sufficiently burned, the samples were very much over-burned, and in some instances melted away.

Being far away from the coal fields and facing a continuously growing scarcity of wood in our country, we were forced to cast about for a cheaper method of burning than with the old style updraft kilns with fire-box on outside, which we were using exclusively up to about four years ago.

Naturally we turned to the continuous kiln for relief, for all of us know that the continuous kiln is primarily a fuel saver.

But then there was that common complaint of fire-marked brick from continuous kilns fired in the old way of putting the coal directly on and over the brick. This objection put this type of kiln out of the question for burning brick for our market.

The use of producer gas in the continuous kiln with the hope of overcoming this difficulty appealed to us, so we decided to make the venture, though this method was then only in its experimental stage.

We arranged with Mr. P. L. Youngren, who had conducted experiments along this line, to build a twelve compartment continuous kiln of his design for using producer gas for firing. In this kiln there are six compartments, adjacent to and connected with each other on either side, and a cross flue connecting the two compartments at either end, thus making the whole continuous. The stack flue is located centrally between the two sides, each compartment a duplicate of each other one, is about 16x30x12 feet, with flash walls along one side. The kiln is of down draft type and was constructed with an individual gas producer for each compartment. Each producer is started up as the heat in the kiln advances sufficiently into the relative compartments, and closed down after that compartment has been sufficiently burned and the next one well under way. The daily capacity of this kiln is thirty to forty thousand brick. This kiln has been in use for over four years; fires have not been out in that time, and it has given excellent results. In it practically all brick are burned hard and uniformly. The construction of the flues is such that the gas and air are thoroughly mixed as the air passes from one compartment to the next. With proper handling and care, every single brick can be burned hard and perfectly. There is no difficulty in getting any desired heat, and the fire is under perfect control all of the time.

The operation of this kiln, our first experience of the kind, was so satisfactory that we decided, a year after we had put it into service, to build another.

This second kiln is also of the Youngren design, but on essentially different lines from the first one, being a tunnel kiln, subdivided into twenty sections. The two tunnels of ten sections each, parallel with each other, and connected by cross flues at either end are 20 feet wide and 11 feet high, with the stack flue located between them. Also in this space between the two tunnels is located the central main gas flue leading the entire length of the kiln, approximately 200 feet, from a single gas producer located at one end. It was on this point of a single producer for the whole kiln that it was considered quite a prodigious venture, but we believed that it would work, and were bold enough to embark. The results have proved very gratifying.

The gas from this central flue is delivered to any kiln-section as the fire advances, through portable sheet-iron laterals. The special system of setting the brick, introduced in this kiln causes a thorough mixing of the gas and air at the points where gas is admitted, as well as forces the heat currents to travel in an upward and downward course through the ware from the point where the kiln is open to the open stack-damper.

In this kiln, as in the other, the heat is under perfect control, and almost any temperature may be attained. Brick are burnt practically all hard and perfect. The daily capacity of this kiln exceeds forty thousand brick, though this is all we have been able to get into it.

As to the practicability, advantages, and general economy of this method of burning brick, we can heartily recommend it. The superior quality of product, saving from

waste through breakage, over-burn or under-burn in kilns, saving in fuel, saving in labor, saving in fire risks, all we think make it attractive.

In either of our kilns we burn brick with approximately 300 pounds of coal per thousand, which we think is not very bad, though this could be somewhat reduced by installing an improved producer.

The cost of labor for burning at our plant has been very much reduced through the use of these kilns. We keep one man on each kiln all of the time and with ordinary supervision these two men keep the two kilns going, turning out seventy to eighty thousand brick daily, and these men have an easy job.

The kiln with single gas producer is a little more economical in fuel, and the fact that coal for this kiln has to be delivered all at one place and not having to start and close down fires is certainly an advantage. Also the wear and tear on a continuously fired producer is much less than on several that are frequently heated up and cooled down. We expect in the near future to equip our chamber kiln with a single producer.

Should we build another kiln for burning building brick or for face brick, it would be a continuous kiln, producer gas fired, with one central producer for the entire kiln.

WILL BOOM BRICK INDUSTRY IN NORTH DAKOTA

North Dakota is destined soon to become still more famous as a brick manufacturing state in the near future. A new brick making center has been established and a new species of brick is being turned out. Beneath the mines of coal operated by the Washburn Lignite Coal Co., at Wilton, in Burleigh county, has been found a peculiar red clay which is apparently excellent brick making material. Four kilns have recently been established at the mines and the manufacture of brick has been commenced.

W. P. Macomber of the Washburn Lignite Coal Co. arrived in Fargo from Wilton, bringing with him a sample of the new product. It is a fine pressed brick of a rich red color, and looks to be very good building material. So far the brick has not been given a trial on any buildings, as it is just being placed on the market.

As the supply of clay is practically unlimited in the vicinity of Wilton, the brick making industry is likely to become an important one there, and it is very possible that with this addition to the output of the Dickinson and Hebron kilns which is already considerable, brick in the near future will become so cheap in North Dakota that it can be used for building purposes in lieu of lumber. In view of the recent advance in the price of western lumber and the fact that lumber is steadily becoming more scarce this would be particularly fortunate.

THE USE OF CLAY FOR PAVING

Richmond, Tex., August 14.—Five years' use having fully demonstrated the value of clay as a plating for sandy streets, our citizens are at work surfacing another. It is the intention to continue until all main thoroughfares are treated.

RAILROADS CAN'T RAISE RUINOUS FREIGHT RATE ON BRICK BEFORE JAN. 1

The National Paving Brick Manufacturers' Association has succeeded in preventing the railroads operating in the territory of the Central Freight Association from raising the freight rates on paving brick until January 1. Judge R. W. Archbald of the United States Court of the Middle District of Pennsylvania, sitting in Scranton on Wednesday, granted an injunction restraining all railroads operating in or out of Pittsburg from raising the rates before January 1.

The granting of the injunction is a very important legal decision in that it gives shippers standing in the courts to appeal from a raise in rates at any time the shipper thinks the rate is exorbitant. Judge Archbald granted the injunction after lengthy argument from George E. Shaw of Reed, Smith, Shaw & Beal and Gordon Fisher of Dalzell, Fisher & Hawkins, representing the railroads, and James S. Campbell representing the Brick Manufacturers' Association.

The entire controversy over the freight rates on paving brick has arisen from a decision recently rendered by the Inter-State Commerce Commission in the Stowe-Fuller case. It was decided by the commission that a brick is a brick, without any distinction as to quality and that the railroads had no right to charge different rates for handling them. "Pigs is pigs" was a similar case.

Heretofore the rate on fire brick for shipment has been 25 cents per hundred from Chicago to New York; on building brick 22½ cents per hundred and on paving brick 20 cents per hundred. After the Stowe-Fuller decision the railroads decided to increase the rate on bricks to 22½ cents per hundred without any distinction as to the quality of the brick.

This increase meant ruin to a majority of the paving brick manufacturers in the country, because of outstanding bids and contracts, which were based on a shipping price of 20 cents per hundred. The association at once decided to appeal not only to the Inter-State Commerce Commission to fix a fair rate for shipment, but to the United States Courts to prevent the putting into effect of the new rate.

Attorney Campbell appeared before Judge Nathaniel Ewing in United States Court for the Western District of Pennsylvania last week, but Judge Ewing begged to be excused from receiving the bill in equity asking the injunction, saying that he was an interested party, and did not feel he could pass on the issue. He communicated with Judge Archbald and by arrangement the Pittsburg people went to Scranton and argued the case.

Judge Archbald ruled that, in view of the fact that a number of the paving brick manufacturers were threatened with ruin if the 22½-cent rate went into effect, he would grant the injunction, to be binding until January 1.

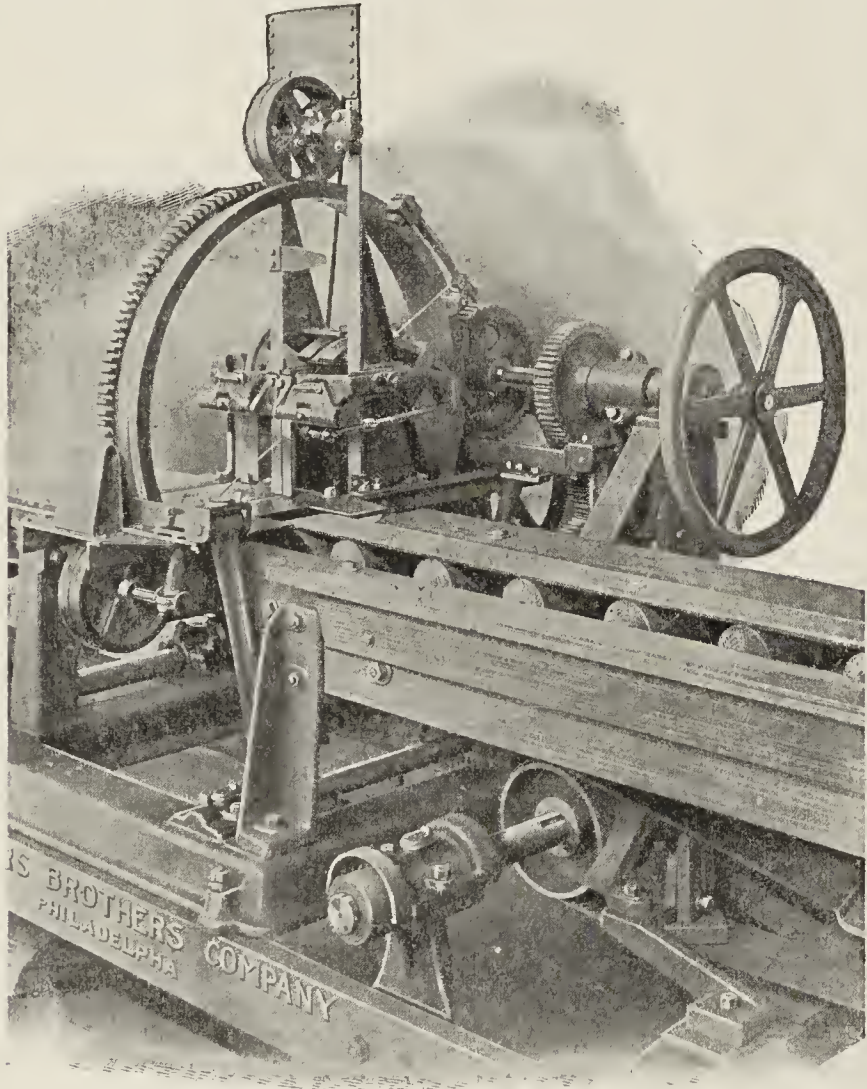
The paving brick manufacturers have already appealed to the Inter-State Commerce Commission for a hearing on the rate question and will ask the commission to fix a flat rate which will be equitable to all brick manufacturers. The hearing will probably not be until fall some time, as all of the members of the commission are away just now. The manufacturers hope the commission will do something to aid them, but at least Judge Archbald's decision has saved them for the present.

The National Paving Brick Manufacturers' Association represents at least 75 per cent of the paving brick manufacturers of the country and millions of money in capital. Its membership reaches from Maine to California and there will be great rejoicing when the text of Judge Archbald's decision is learned.

A NEW AUTOMATIC SIDE CUTTER

The capacity of a clayworking plant and some measure of its profit depend largely on the efficiency of the cutting apparatus which divides the issuing clay column into brick. Cutting devices of every type have been placed on the market to meet with the increasing exigencies of high-speed demands and the Chambers Brothers Co., Philadelphia, Pa., has added a new automatic side cutter to its many lines and this addition possesses points of novelty and considerable interest. The Chambers Brothers Co. has been in the clayworking-machinery business for very many years and in the construction of its cutting machinery it has persistently adhered to its original idea that a continuous rotary cutter was the successful means of automatically cutting brick, and several forms of cutters on this principle have been placed on the market by the company and many of these machines are in successful operation at the present time.

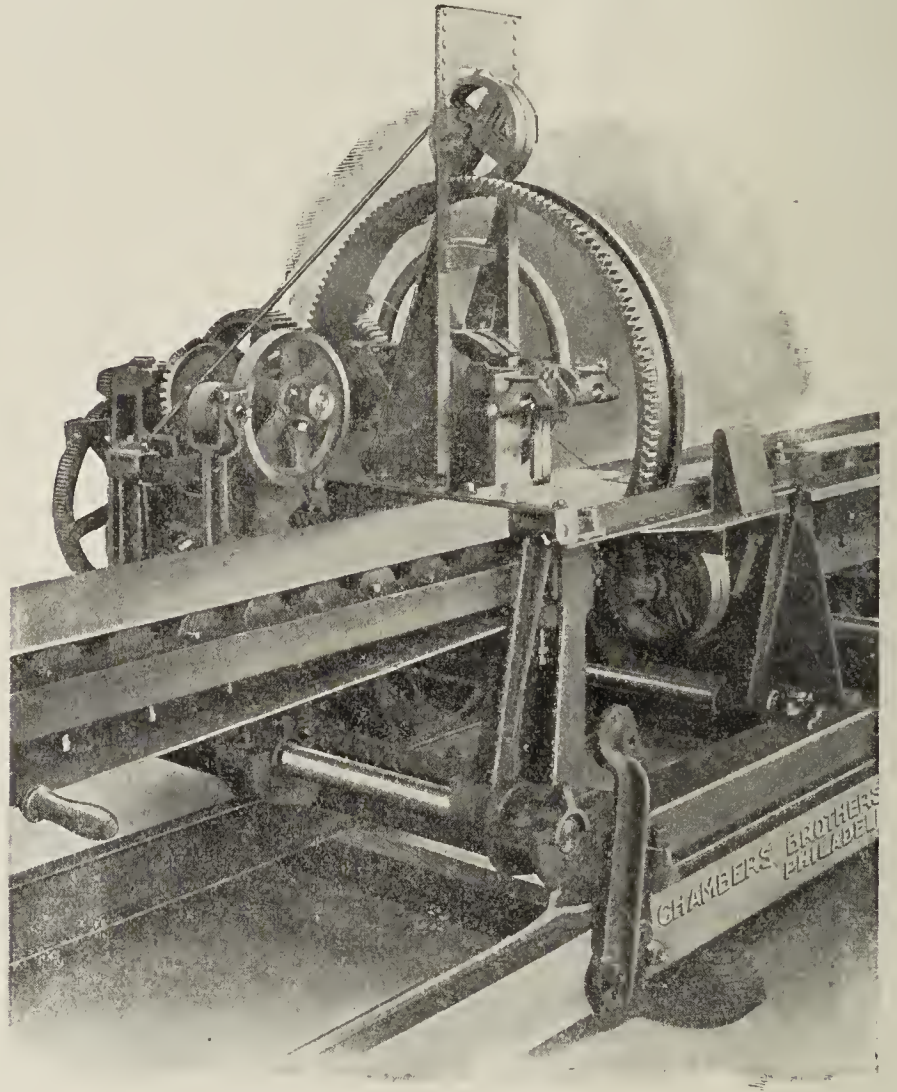
The new automatic cutter is designated as the No. 6 and is of the rotary type, employing a single wire stretched from side to side of a revolving ring. The cutter cuts one brick at a time, the wire passing through the bar of clay with a



Rear View of New Chambers Cutter

downward, shear movement which insures smooth edges to the brick. The bar of clay is carried from the die of the brick machine to the cutter by a carrying belt running over rollers, and the dead surface over which the clay has to slide at the cutter is reduced to a minimum, being only the thickness of about two bricks. The wire passes through a steel slit plate, the width of the opening being only about 1/16 of an inch. Provision is made for the discharge of stones, should any occur in the path of the wire, the brick being cut perfectly square and of uniform thickness. The output is unlimited.

The revolving ring and the slit plate have a slight oscillating motion and move forward during the passage of the wire through the clay, returning to their original position before the next cut is commenced. This oscillation is very slight and is secured by a perfectly calculated and adjusted mechanism by which is obtained a smooth, quiet motion devoid of jar or injury to the machinery. The speed of the cutter is under the control of a male and female friction, governed by the clay bar itself. The illustrations show a front and a back view of this cutter, which has already



Front View of New Chambers Cutter

been tested up to 110 brick per minute with entire satisfaction. The Chambers Brothers Co. feels very confident that the No. 6 rotary cutter will meet with favor from clayworkers desiring an efficient cutting apparatus in connection with machines manufacturing from 20,000 to 40,000 brick daily. Full information concerning this machine can be obtained upon application to the company.

NEED ANOTHER BRICK PLANT

In the opinion of contractors, one of the greatest needs of Tacoma, Wash., is another brick manufacturing plant. What almost amounts to a brick famine exists on Puget Sound. The plants now in operation are worked to the limit to meet present demands and the price of brick has been forced about as high as the builders will stand. What the situation will be with the increase in building which the growth of the city demands is not hard to imagine.

Investors can find no better use for capital, from \$10,000 to \$100,000 than to invest in a brick manufacturing plant near Tacoma. The raw material exists in practically inexhaustible quantities. The demand for the finished prod-

THE HORSE-POWER OF A CHIMNEY

Although every clayworker knows that the chief business of a chimney is to produce a draught whereby the fuel in the kiln or boiler furnaces may be properly burned, it is seldom that the real value of a chimney is appreciated because of the failure to regard it as a machine.

The power or work done by any machine working under the best conditions is always measured by comparing it with the number of theoretical horses which would be required to do the same amount of work in the same time. We use the term "theoretical" horses because the power of the living horse varies with each animal and at different times, and the term "horse-power" was devised by the great James Watt, as the result of experiments which he made on a number of horses working under different conditions. His experiments were not carried out with that accuracy we look for nowadays, so that the expression "horse-power" is now a purely arbitrary measure, which like the term "foot" has a definite value of its own, but no definite relation to the animal from which it was originally obtained.

Just as it is customary to measure the capacity for work of all machines in terms of horse-power, so also a chimney—being a machine for the movement of air and flue gases, just as a pump is a machine for the movement of liquids, and a locomotive for the movement of solids—may have its capacity for work measured in similar terms, and the expression "the horse-power of a chimney," though unusual, is nevertheless quite correct.

The case of a ventilating fan which is used for precisely similar purposes as a chimney, makes the comparison all the more clear, and enables the clayworker to calculate the relative values of natural (*i. e.*, chimney) and artificial (*i. e.*, fan) draught.

IN THE CASE OF A FAN.

Many and oft-repeated experiments have shown that under the best conditions coal of average quality requires from 12 to 15 times its weight of air if it is to be properly burned, and that in ordinary practice, even with a skilful and conscientious stoker, the larger of these two amounts is the least which can be efficiently used in practice.

This means that for each ton of coal consumed there must be the means provided for supplying it with 15 tons of air, measuring when cold about 436,000 cubic feet. As many boilers in clayworks use two tons of coal a day of ten hours, this is equivalent to about 1,460 cubic feet per minute. A kiln will burn more fuel than this, and will require a proportionately larger quantity of air.

Not only so, but the air on entering the furnace becomes warmed, and during the combustion greatly heated, and at the same time mixed with the gases formed by the combustion of the fuel, so that its volume becomes about four times as great, and a boiler delivering 6,000 cubic feet of gases into its chimney is not at all uncommon in small works.

Supposing that a fan, instead of a chimney, were to be employed to move this large quantity of air, what horse-power would be needed to drive the fan? This will, of

course, depend on the pressure of water-gauge reading of the fan used; this can be assumed to be 2 in.

Then the volume of air multiplied by the water-gauge reading, and then by 5.2, and divided by 33,000 will give the horse-power required to move the air. Hence,

$$\frac{6,000 \times 2 \times 5.2}{33,000} = 2 \text{ horse-power,}$$

but doubling this to allow for friction and other losses in running, we may take it that about 4 horse-power would be required in practice.

To determine the effective size of a fan for this work the area of its inlet ("equivalent orifice")—

$$\frac{\text{Vol. of air} \times 0.37}{1,000 \sqrt{\text{water-gauge}}}$$

in other words,

$$\frac{6,000 \text{ c. ft.} \times 0.37}{1,000 \sqrt{2}} = 1.6 \text{ sq. ft. inlet area for fan.}$$

In actual practice a fan with a somewhat larger inlet—possibly even double this size—would be installed for safety in working and for allowance for friction, etc.

The other characteristics, such as speed and diameter of the fan, can also be calculated, if necessary, but in practice it is far better to consult the makers, after telling them the number of cubic feet of air per minute the fan is intended to move.

WATER GAUGE READINGS.

The extent of the draught, whether produced by chimney or by fan, is most easily measured by means of a water-gauge, consisting of a U-shaped tube, containing water, one end of the tube being connected to the chimney and the other left open. Various modified shapes have at different times been placed on the market in order to reduce the errors of reading such small variations as occur in ordinary practice, and the clayworker should purchase his gauge ready-made, and not try to rig up one for himself.

Although many firemen are acquainted with these draught-gauges, in some form or other, they are quite unable, in the majority of cases, to find out whether they ought to work with a sharper fire or not from the indications of the gauge alone, nor can they tell whether the chimney shows a sufficiently high gauge-reading or not.

To calculate the gauge-reading from the height of the chimney, it is only necessary to multiply the height of the chimney by 4 1-3, and to divide it by a number produced by adding 273 to the temperature of the gases in the chimney, this temperature being measured in Centigrade degrees. Thus, if the average temperature inside the chimney is 300 deg. Cent. a water gauge attached to the chimney when the latter is working should show a reading of 1½ in. for a chimney 200 ft. high.

This calculation may, in fact, be simplified in common use, where a good stoker is employed and the gases in the chimney have the average temperature just given (300 deg. Cent.), by considering that the water-gauge should give a reading equal to the height of the chimney (in feet), divided by 133.

THE VELOCITY OF CHIMNEY GASES.

In order to ascertain the speed at which the gases are traveling through a chimney it is necessary to employ an instrument for the purpose (an anemometer), or to calculate it from the water-gauge readings.

The former method is the more accurate, but the latter is the more commonly adopted in clayworks. Under ordinary conditions it is sufficiently accurate to assume that the velocity of the gases in a chimney (measured in feet per second) is equal to 65 times the square root of the water-gauge readings. Hence, if the water-gauge reading be 1 in., the velocity of the gases would be 65 ft. per second, and if—

Water gauge in inches.	Velocity of gases in feet per second.	Velocity of gases in feet per minute.
$\frac{1}{2}$	45	2,730
1	65	3,900
2	91	5,460
3	110	6,600
4	130	7,800
5	143	8,580
6	162	9,720

The velocity of the air in feet per minute, multiplied by the area of the chimney at its smallest part, will give the number of cubic feet of gases passing through the chimney per minute. Consequently a boiler chimney delivering gases at a speed of 3,900 ft. per minute (corresponding to 1 in. of a water-gauge reading) will require to have an internal diameter of at least $1\frac{1}{2}$ sq. feet in the smallest part if it is to carry the 6,000 cubic feet of gases which even a comparatively small boiler produces. A chimney of 4 ft. diameter and 12 square feet area, on the other hand, can accommodate the combustion of over 10 tons of coal per working day, if matters be so arranged that the draught-gauge reading is maintained at 2 in.

THE SIZE OF A CHIMNEY.

Hence, in calculating the size of a chimney for a given boiler or kiln, it is first necessary to ascertain the number of cubic feet of gases to be passed through it per minute at the time of the hardest working of the boiler—this depending on the amount of fuel to be burnt per minute, and roughly calculable as 80 times the number of pounds of fuel burned per minute—then to ascertain (from a knowledge of the temperatures to be reached) what amount of draught-gauge reading will be most efficient, and what diameter or height will be most convenient for the chimney.

Thus, with a consumption of 15 lb. of coal per minute, producing 1,200 cubic feet of gases, at a gauge reading of 1 in., with an average temperature inside the chimney of 300 deg. Cent., should require a chimney 133 times the draught-gauge reading, namely 133 ft., or say 150 ft., to allow for internal losses.

To build a chimney of this height it would have to be of considerable width, so that its internal area would be far more than was necessary for the combustion of the amount of coal specified, and a damper would have to be used in order to reduce the area of the chimney to such an extent as would enable it to propel the gases at the necessary

speed and maintain the gauge reading at the desired figure.

If the damper be opened too wide, too much air will be admitted to the fuel may be great if the fireman is not admitted to the fuel, and as this will be heated to no purpose, the waste of fuel may be great if the fireman is not sufficiently careful. The only true way of ascertaining whether too much air is being admitted is to analyse the flue gases—a procedure which is impracticable in most clayworks—but much may be done by a careful fireman who understands the appearance of his fires when too much or too little air is being supplied, particularly if he watches his draught-gauge carefully.

In deciding at what draught pressure it is best to work it is necessary to make a few experiments, as many chimneys are built without any serious regard to the rate at which the fuel will be burned in the furnace, and are generally built too large rather than too small. It therefore follows that the theoretical gauge-readings, based on calculations such as those just given, may, and in many cases will, be much higher than is necessary in practice, owing to the chimney being too high, it having been built so in accordance with local regulations or at the fancy of the builder or owner. The calculations are of value, as showing the least sized chimney with which it is possible to work, and no man who had any idea that his works might need enlarging at any time would build a chimney just to fit his present demands.

Even in a continuous kiln the chimney is frequently much larger than is actually necessary for the combustion of the fuel, but the enormous quantities of air used and of steam produced during the earlier stages of the firing of such a kiln render a large chimney necessary, more especially as its effective size can be reduced to any extent by the use of dampers, whereas if built too small in the first place it could not so easily be enlarged.

COMPARING CHIMNEY AND FAN.

In order to decide whether it is desirable to build a chimney or to install a fan when a new boiler or kiln is being built, a number of considerations are necessary. When a chimney is incapable of doing the work demanded of it, the installation of a fan as a supplementary draught producer is a comparatively simple matter, as the additional volume of gases to be dealt with can be calculated with reasonable accuracy.

When, however, a new yard is being opened, the calculations are apt to become little more than elaborate guess-work, and consequently of but little value.

The only way in such cases is to make a sufficiently liberal allowance for all possible needs, both present and future, and on this basis to compare the chimney with the fan. Thus, supposing that an average of 50,000 cubic feet of gases, at a temperature of 300 deg. Cent., be taken as the basis of the calculations, and that a draught equivalent to $\frac{1}{2}$ in. gauge reading is sufficient to maintain the correct temperature in the system. (It is of course clear that the greater the draught the hotter the system, provided that there is sufficient fuel to combine with the additional air

thus supplied.) The horse-power required for the fan under these conditions will be (as previously explained)—

$$50,000 \times \frac{1}{2} \times 5.2$$

$$33,000$$

$$= 4 \text{ horse-power.}$$

But for the reasons already given, an 8-h. p. fan would have to be used in practice. The cost of these 8-h. p., and the cost of repairs and depreciation of the fan, can then be calculated from the particulars supplied by the makers.

For the chimney several small calculations are necessary, viz., (a) the velocity of the moving gases (calculated from the draught-gauge) = 45ft., per second, or 2,730ft. per minute; (b) the area of the chimney calculated as follows: a chimney of 1 square foot area carries off 2,730 cubic feet per minute, so that a chimney of 20 square feet area will carry off 54,600 cubic feet of air per minute, of rather more than the 50,000 cubic feet actually supplied. So that a minimum area of 20 square feet will be required; (c) the height of the chimney (calculated from the draught-gauge reading) = $133 \times \frac{1}{2} = 67\text{ft.}$

Hence, in practice, a chimney of 90ft. height and 5ft. diameter is the smallest which could be built under the circumstances. The cost of this distributed over a sufficient number of years to give a correct depreciation value will give a figure comparable to the annual cost for the fan.

The actual figures will differ in different districts and cannot be given here, but sufficient has already been written to enable the clayworker to ascertain the comparative values of these two methods of draught production for himself.—*British Clayworker.*

STATEMENT TO BOND-HOLDERS OF THE UNITED STATES BRICK COMPANY

The following statement was issued on Monday by President Gery and Treasurer Hoffmeister, of the United States Brick Company:

To the Bondholders of the United States Brick Company:

In view of the default of the United States Brick Company in the payment of the interest due upon its bonds July 1, 1907, and of inquiries of certain bondholders, indicating a misapprehension of the relations of the United States Brick Company to the Montello Brick Company, whose stock it owns, a brief and simple statement of the facts seems due to the parties interested for their own information and to correct such misapprehension.

The Montello Brick Company, incorporated in 1899 with a capital stock of \$1,050,000, acquired the Montello plant near Sinking Spring, erected the Wyomissing plant near Reading, and leased the plant at Perkiomen, and purchased certain land adjoining the leased property.

The Montello Brick Company has no bonds or other obligations, excepting those covered in the lease of the Perkiomen plant.

THE MONTELLO BRICK WORKS.

The Montello Brick Works was incorporated in 1902 with a capital stock of \$1,500,000. This company leased all the property of the Montello Brick Company, erected the Oaks plant for the manufacture of bricks in tunnel kilns

under a patented process covering Eastern Pennsylvania and considered of great value because of their capability of making a uniform quality of bricks at a reduced cost.

The fund provided for the erection of the Oaks plant was seriously impaired by the necessity of rebuilding the Wyomissing plant and the Perkiomen plants, which were destroyed by fire, and the duty of replacing which under the terms of the lease devolved upon the Montello Brick Works.

The Montello Brick Works has no bonded debt.

U. S. COMPANY ORGANIZED.

In December, 1904, the United States Brick Company was incorporated under the laws of Delaware as a holding company acquiring the patents for all the United States, excepting Eastern Pennsylvania, under which the Oaks plant was erected, and purchased from the holders thereof all the capital stock of Montello Brick Works at par, giving in exchange a collateral trust six per cent bond upon which the interest has not been earned and therefore has not been paid. The United States Brick Company never sold any bonds nor received any money on account thereof—the whole issue of bonds having been exchanged without any money consideration.

The United States Brick Company advanced a large amount of money for the completion of the Oaks plant, the cost of which greatly exceeded the estimate, and the long delay in the completion of which deferred its ability to earn the expected income, though the interest upon the United States Brick bonds was constantly running until the company found itself unable to carry the burden, and the inevitable result ensued.

Neither the Montello Brick Company nor the Montello Brick Works issued any bonds, which is industrial wisdom, enabling the company to suspend operations from time to time when overstocked or when business conditions do not warrant the operation of the plants without having the burden of incessant fixed charges.

TAKES THE CONSEQUENCES.

The United States Brick Company did not take as wise a course and now it takes the consequences. A debtor has no standing with his creditors except upon the basis of his contract; he must pay his debts or surrender his property, and the creditors are the only judges as to the wisdom of enforcing the terms of the contract. The United States Brick Company is not an operating company and is dependent altogether upon the income applicable to dividends of the companies of which it is a stockholder, and as the measure of its ability to pay is dependent upon its income, it does not matter to its creditors whether they receive that income in the form of interest or of dividends.

DEPENDENT ON THE FUTURE.

In this business emergency the company informally suggested to its bondholders as good policy for all parties to convert the bonds into preferred stock. Most of the bondholders have provisionally assented to this plan, in the hope that upon being relieved from its fixed charges and other indebtedness, the company may be put upon a sound business footing, the provision or stipulation being that all the bondholders should assent, which is a necessary condition, as no bondholder can be deprived of his legal remedy under the deed of trust securing his bond.

The success of the United States Brick Company is dependent upon further conditions, upon the erection of other plants and the enlargement of its business, and there is no reason why its expectations may not be ultimately realized if its bondholders will depend upon the earnings of the company as a return for their investment.

ALBERT A. GERY, President.

JOHN F. HOFFMEISTER, Treasurer.

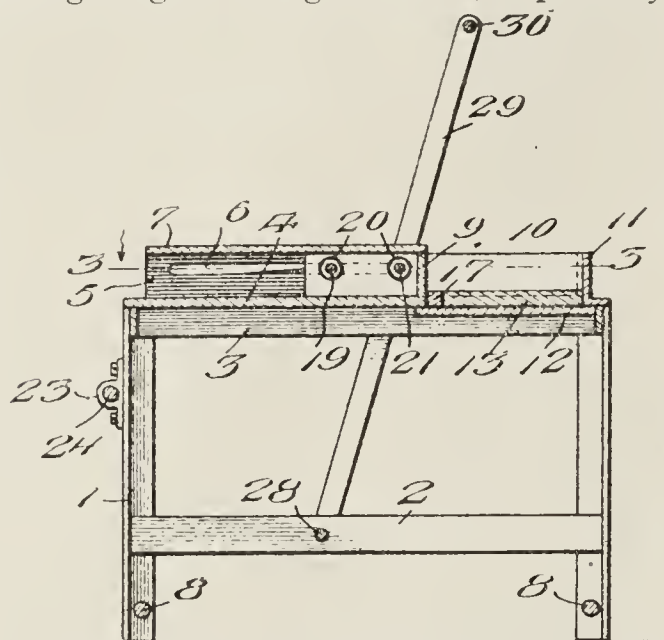
United States Brick Company.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

855,382. Brick-Molding Machine. Newton H. Bolton and James Belisle, Minneapolis, Minn. Filed Oct. 13, 1906. Serial No. 338,867.

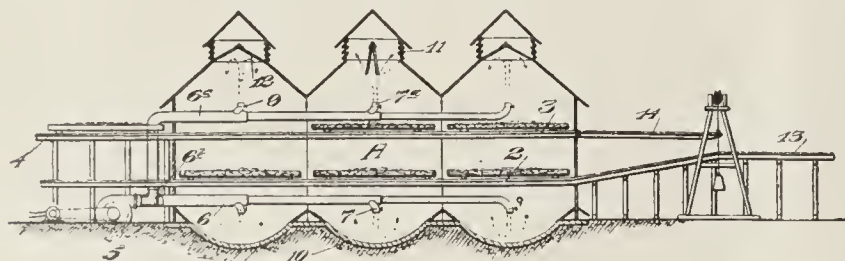
Claim—A brick molding machine comprising a supporting frame, a table carried thereby, said table being provided at its rear with upwardly extending longitudinal flanges, forming the front and rear walls of a mold chamber, the front wall being formed with a plurality of slots, said table also being provided in front of said front wall with side flanges having longitudinal guide slots, a plurality of par-



titions arranged for movement through said slots in the front walls to be projected into and out of the mold, a pallet removably arranged within the mold chamber, said pallet being of a width somewhat less than said chamber, a filling piece between the front wall of the mold and front edge of the pallet, a pair of rods connecting the forward ends of the partitions, the ends of the rods forming guides movable in the slots in the guide flanges, the ends of one of the rods being extended beyond the flanges to provide journals, a rock shaft having crank arms beyond the sides of the frame, links connecting said arms with the journals, and an operating lever having a slot therein receiving one of said journals.

855,853. Drying Apparatus. Emil C. Horst, San Francisco, Cal. Filed Sept. 14, 1905. Serial No. 278,381.

Claim—In a drying apparatus, a series of compartments having perforated traveling floors, an air-forcing mechanism and ducts disposed respectively above and below said floors, with upwardly and downwardly discharging passages, and concave floor and dome-shaped ceilings into which the heated air is discharged said concavities serving to distribute and return the heated air through the floors.

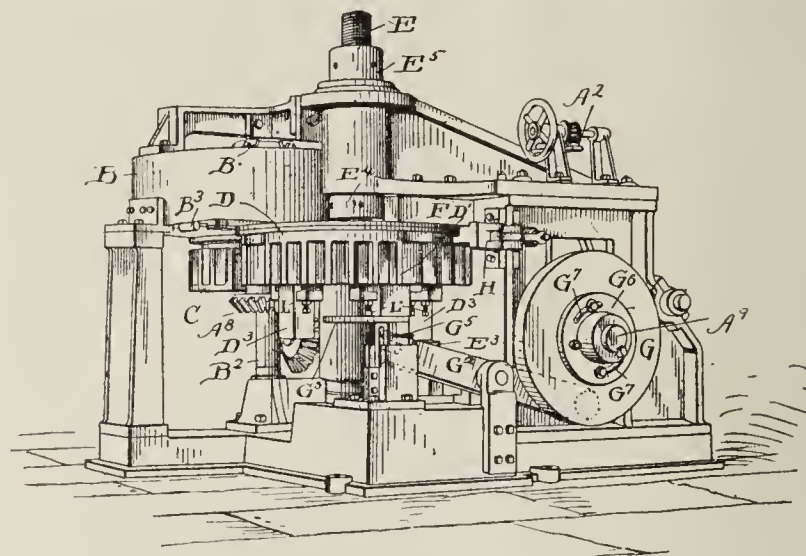


In a drying apparatus, a series of compartments having superposed tracks, means for delivering heated air above and below said tracks and controlling its delivery, a series of perforated floors mounted upon wheels and adapted to contain the product to be dried, said floors being movable through the compartments upon each level, means for transferring the floors from one level to the other, said means comprising a track extending outwardly from the lower

level, a hinged tiltable track extending from the upper level and normally connecting with the lower track, said upper track being movable to allow cars to pass beneath it to transfer from one level to the other.

855,222. Brick-Press. George W. Balkwill, Cleveland, Ohio, assignor to The Semisteel Company, Cleveland, Ohio, a Corporation of Ohio. Filed March 10, 1906.

Claim—A mechanically operated brick press comprising a rotating mold cylinder having therein a plurality of mold cavities, a plunger in each cavity and vertically reciprocable therein, a removable face plate fitted to the top of the mold



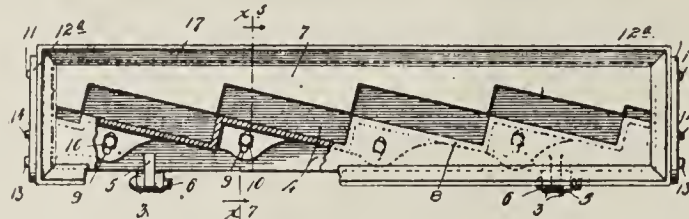
cylinder and having openings therein above the mold cavities, a projecting ledge around the lower part of each mold cavity below the lower limit of movement of the upper face of the plunger, lining plates fitted about the four side walls of the mold cavities, said lining plates being provided with shouldered recess along the longitudinal edges and fitted in the mold cavity above said projecting ledge in such manner that the shoulders come underneath the edges of the face plate overhanging the mold cavity, and adjusting devices carried by said ledge whereby the lining plates may be held up in such position that their upper edges are flush with the surface of the face plate.

852,908. Fireproof Material. Keizo Sakurai, San Francisco, Cal. Filed April 5, 1906. Serial No. 310,023.

Claim—A fire refractory material comprising a refractory vehicle in two forms, one a coarse granular mass and the other a fine powder, suitable proportions of this fine and coarse stuff being mixed with a suitable proportion of an easily fusible binder and water, subjected to high pressure and baked.

A fire-proof material comprising approximately 40% of a coarse granular fire-proof vehicle, approximately 20 to 30 mesh, approximately 40% of the same is powdered form, approximately 150 to 200 mesh, approximately 20% of an easily fusible binder and sufficient water to make a paste, said paste subjected to a pressure of approximately 5,000 pounds to the square inch, and this pressed product baked to approximately 1,000° C.

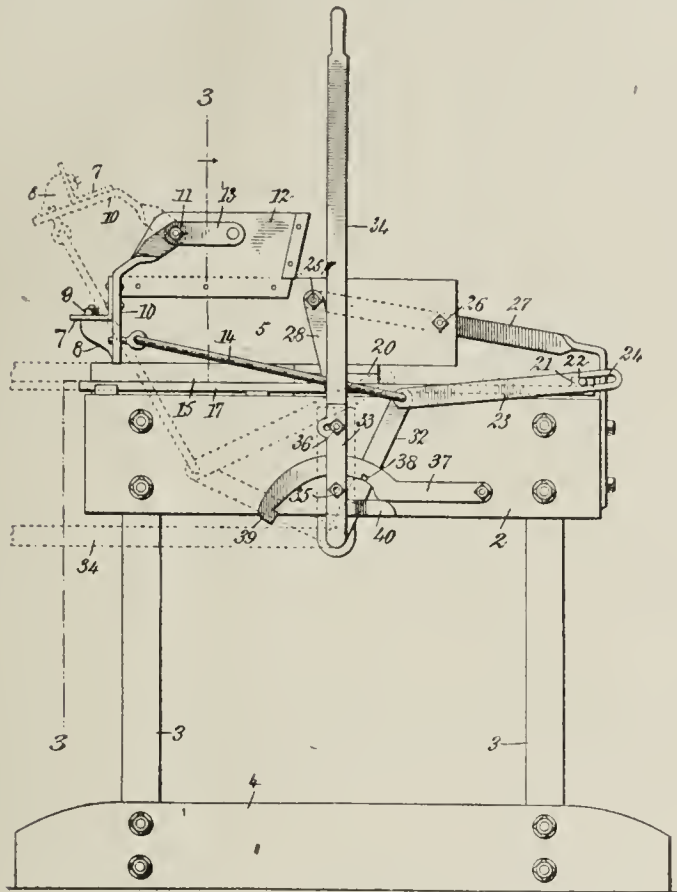
857,624. Brick-Molding Machine. Thomas C. Holt, Minneapolis, Minn. Filed July 23, 1906. Serial No. 327,311.



Claim—In a molding machine, the combination with a supporting frame, of a reversible base plate supported thereby, and a pair of wall forming mold plates formed on zigzag rectangular lines, and one of which wall forming mold plates is secured to and is reversible with said reversible base plate, and the other of which is independently supported from said supporting frame, substantially as described.

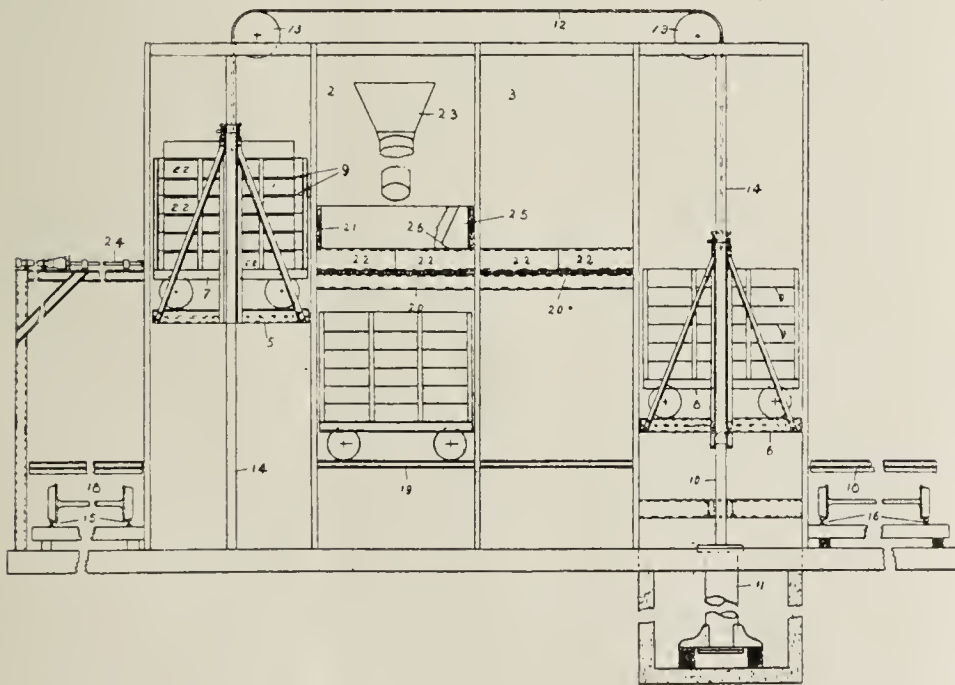
855,716. Brickmaking Machine. Earl L. Martin, Woodburn, Iowa. Filed June 29, 1906. Serial No. 324,018.

Claim—A brick making machine comprising a mold having a hinged front wall, slidable bottom and rear walls, and stationary partitions and side walls.



A brick mold having side walls, a front wall pivoted at a point above the top thereof, a rear wall slidable between said side walls, an arm, means for oscillating it, means connecting said arm to the front wall, and means connecting the arm to the rear wall, said last mentioned means including a lost-motion device whereby when the arm is oscillated in one direction the front wall is swung away from the side walls before the rear wall slides between them.

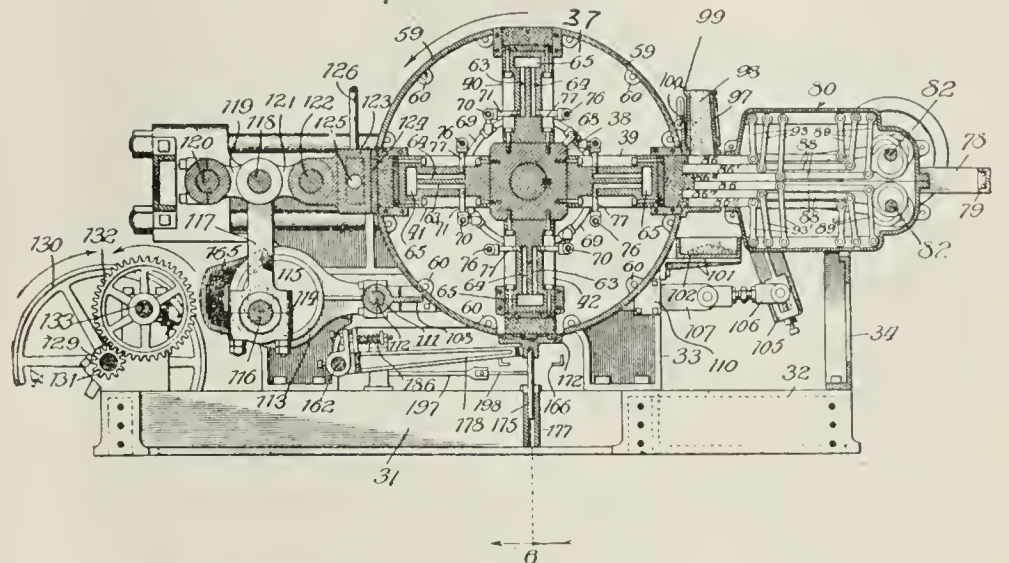
857,143. Filling Mechanism for Brickmaking Plants. Frank Zazelmeyer, Bay City, Mich. Filed July 30, 1906.



Claim—A filling mechanism comprising a plurality of elevators, a filling box interposed therebetween having a mold receiving space therebeneath, trucks adapted to support a plurality of molds in tiers, the trucks removably received on the elevators, means for conveying the trucks to and from the elevators, and a pusher arranged in alignment with the mold receiving space beneath the filling box, one of the elevators adapted to bring successive tiers of the truck loaded with empty molds into alignment with the pusher and filling box, the passage of the molds beneath the filling box adapted to crowd the previously placed molds onto the truck removably carried by the remaining elevator.

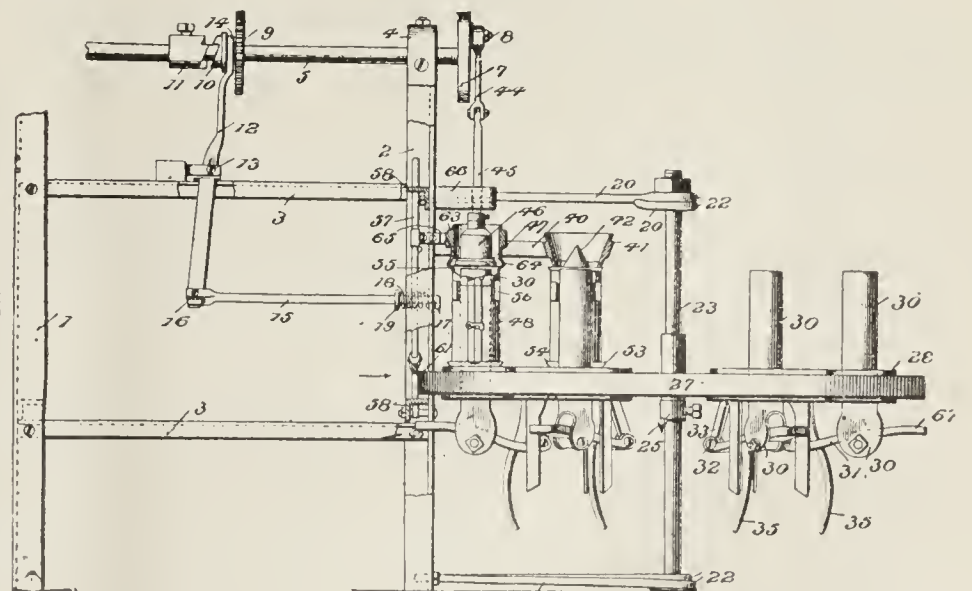
857,364. Brickmaking Machine. Frederick P. Rosback, Benton Harbor, Mich. Filed Feb. 28, 1907. Serial No. 359,875.

Claim—In a brick-machine, the combination of a rotatable drum, molds disposed at intervals about said drum, tampers supported at one point adjacent to the periphery of the drum, a plurality of eccentric-actuated reciprocating tampers supported at one point adjacent to the periphery of the drum to act against the material to be compacted in a single mold, receiving-means for the product of the machine supported at a third point adjacent to said periphery, and drum-driving means constructed and arranged to rotate said drum intermittently to register molds thereon with said points in each partial rotation of the drum.



In a brick-machine, the combination of a rotatable drum, molds disposed at intervals about said drum, each mold consisting of a fixed bottom-plate and a wall-structure supported to extend about said plate and movable back and forth thereon, tamping means supported at one point adjacent to the drum, a power-driven presser-head reciprocally supported at another point adjacent to said periphery, receiving means for the product of the machine supported at a third point adjacent to said periphery, drum-driving means constructed and arranged to rotate said drum intermittently to register molds thereon with said points in each partial rotation of the drum, and means constructed and arranged to co-operate with said drum-driving means to move said wall-structure at said receiving point away from its contents.

858,303. Tile-Molding Machine. James I. McLimans, Sherburn, Minn. Filed March 7, 1907. Serial No. 361,114.



Claim—In a machine for molding hollow tiles, the combination with a platform provided with an opening, of a core movably mounted in said opening, a jacket adapted to be placed on the platform and surround the core, and a plunger having a solid head adapted to be forced into the jacket to compress the material therein and simultaneously force down the core as the material is compressed.

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Vol. XXXI.

AUGUST 15, 1907.

No. 3

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

Subscribe for the Clay Record today.

Conceited people would not be so bad if they didn't spend so much time in trying to monopolize all the lime-light.

Some people advertise in a journal because the paper is nicely printed, wise ones advertise for results. They are what count.

Probably the easiest task a business man is ever called upon to accomplish is to induce an employe to accept an increase in salary.

There is no more danger of not making an advertising campaign pay than there is of not winning out in any detail of your business.

"Show me the business man who gives no thought to his business, who neglects his trade or technical journal and remains in ignorance of the important things going on in his line, and I'll show you a man who trusts somebody to do these things for him or who will have some vain regrets when he wakes up."

BUILDING OPERATIONS FOR JULY

The long prevailing prosperity in building operations continues with little abatement, practically none if Greater New York be eliminated from the calculations. Official reports from fifty-five leading building centers collected by The American Contractor, Chicago, and tabulated, shows a loss in twenty-six cities and a gain in twenty-nine as compared with July, 1906. The losses are comparatively light from a monetary standpoint, with the exception of New York city, which brings down the total decrease to 11 per cent. This decline must be chiefly ascribed to the enormous operations of recent years and the consequent supply of new buildings. The following figures show the percentage of gain in some of the cities: Allegheny, 17; Cambridge, 94; Chicago, 10; Cleveland, 21; Chattanooga, 276; Davenport, 233; Dallas, 44; Denver, 21; Detroit, 48; Duluth, 23; Evansville, 246; Milwaukee, 40; Mobile, 37; Nashville, 15; New Haven, 12; Omaha, 22; Paterson, 110. Losses are as follows: Baltimore, 39; Birmingham, 60; Buffalo, 17; Harrisburg, 7; Hartford, 42; Indianapolis, 16; Kansas City, 17; Louisville, 78; Los Angeles, 26; Minneapolis, 37; New Orleans, 31; New York, 23; Philadelphia, 7; Pittsburg, 43; Pueblo, 39; St. Louis, 7; San Francisco, 28; Syracuse, 33; Salt Lake City, 33; Topeka, 24. The total loss as compared with July, 1906, is 11 per cent. The gains and losses are widely distributed and show a response to demands for new buildings.

FALL BUSINESS GOOD AT COLUMBUS

Fall building promises to be very heavy, according to contractors and realty men. This is due to the lateness of the start and the fact that the weather was not permissible for outdoor work until late in the spring. Another thing that operated against building this year was the scarcity of brick, many contractors being utterly unable to get material of that description for their purposes. The direct result will be that building activity will continue until late in the fall and if the weather is at all favorable it may last well up into the winter. At the office of the building inspector the past few days great activity in the issue of permits prevails, which is highly encouraging to a continuation of prosperous times for months to come.

PROPERTIES AND TESTS OF FULLER'S EARTH

A new theory of the properties of fuller's earth is presented by John T. Porter in a paper published by the United States Geological Survey in its "Contributions to Economic Geology, 1906" (Bulletin 315). The work reported in this paper was done in the laboratory of Charles Catlett, of Staunton, Va., at his expense, in connection with the investigation of the subject for private persons, and the results have been placed at the disposal of the Survey.

Mr. Porter's paper gives an account of the geology and origin of fuller's earth, states its character and composition, describes the physical and other tests made by him, discusses the theories of other writers as to the nature of the material, and presents his own, together with its practical application.

OBITUARY

Joseph H. J. Croxall, vice president and manager of the Croxall Pottery Company, East Liverpool, Ohio, one of the oldest manufacturers in East Liverpool is dead. He was 57 years old and leaves a wife and three children.

Dudley B. Hutchins, died at the home of a relative in Pittsburgh, death was due to a recent operation. He was formerly engaged in the brick business at Portsmouth, Ohio, but later was the manager of the York Portland Cement Co., which was newly established.

Charles Graham, who established the Graham Pottery on Metropolitan ave., Brooklyn, N. Y., died at Sheepshead Bay, where he was spending the summer. He was 53 years of age and leaves a widow and two children.

FIRE! FIRE! FIRE!

The plant of the Carey Brick Co., 15th and Hossick sts., Troy, N. Y., suffered a small loss by fire caused from an overheated kiln.

The plant and machinery of the Concord Brick Mfg. Co., at Natchez, Tenn., was completely destroyed by fire. The loss is estimated at \$15,000, Insurance \$8,000. Plant will be rebuilt at once.

One of the stables owned by the Boston Brick Co., on Webster ave., Boston, Mass., was destroyed by fire causing a loss of horses and buildings of \$4,500.

Fire broke out in the kiln sheds of the Crookston (Minn.) Brick & Tile Co., and in one-half hour there was nothing left of them but cinders and ashes.

The Brick Works at Cumberland, Wis., owned and operated by S. Douateller, burned to the ground, causing a loss of \$4,000 with no insurance.

WILL MAKE BUILDING BRICKS IN TOPEKA OF COMMON BLACK DIRT

The Kansas Strenolith Co., incorporated under the laws of Arizona and having exclusive right in Kansas to manufacture strenolith, a new building material, has opened offices on West Sixth street, Topeka, Kansas, and will establish a plant in Topeka within a short time with machinery for manufacturing its product. H. M. Kingsley, of Washington, D. C., is in charge of the office of the local company. H. L. Shirer is president; H. A. Kingsley, a brother of H. M. Kingsley, vice president; Sheriff J. M. Wilkerson, treasurer; A. B. Poole, secretary, and S. S. Ott, H. M. Kingsley and Wilder S. Metcalf, directors. All are Topeka men except H. M. Kingsley and General Metcalf.

The company claims to be able to manufacture building material superior to stone out of sand, common soil or almost anything. Out of the dirt moved by digging a cellar they can manufacture enough material for the walls. When the company's plant is in operation the company intends to bid for the dirt removed from excavations where building is in progress. In many instances what to do with this dirt is a serious problem to the contractors.

Ordinary black dirt or sand or other substance is treated with chemicals that convert it into stone.

ACCIDENTS, DAMAGES AND LOSSES

The Builders Brick Co., Chicago Heights, Ills., has given a trust-deed on 40 acres of land to secure a loan of \$30,000.

Fred Schad, an employe of the American Tile Co., Zanesville, O., fell from a moving street car and was fatally injured.

Bocy Bivens, a life convict in the camps of the Cherokee Brick Co., at Macon, Ga., made his escape. He is said to be a desperate character.

W. F. Soisson, of the Soisson Fire Brick Co., Connellsville, Pa., has been made receiver for the Reese-Hammond Fire Brick Co., of Bolivar, Pa.

James Kelly, aged 42 years, met a horrible death by being ground to pieces at a brick machine at the Booth & Flinn Brick Works at Pittsburgh, Pa.

Action has been begun to foreclose a mortgage on the White Stone & Brick Co's. property at Fond du Lac, Wis. This company was formerly the Moser Lime & Stone Co.

Patsy Sandy, age 39 years, an Italian employe of the Youghioghenny Brick Co., McKeesport, Pa., was almost blown to pieces by an explosion of powder which he was using in blasting.

The Aslop Engineering Co., Los Angeles, Cal., has gone into the hands of the receiver. Mr. Douglas who holds 80 per cent of the indebtedness agrees to assume same and give 18 months secured notes.

Frank Wolf and his father began suit for \$18,000 damages against the Columbus (O.) Clay Mfg. Co., for the loss of three fingers on the hand of the son and the loss of the son's services.

Charles L. Smith the manager of the American Brick & Tile Co., at Mason City, Ia., met with a very serious accident while superintending the building of their new plant. In raising an angle iron it slipped and fell upon him striking his hip.

ALLENTOWN BRICK MANUFACTURER SERIOUSLY HURT—WOMEN ESCAPE INJURY

Allentown, Pa., Aug. 15.—David Mattern, a brick manufacturer, is in a precarious condition with injuries sustained when he was thrown from his carriage yesterday afternoon. He was driving with Mrs. Mattern and Mr. and Mrs. E. A. Saylor, when an automobile came along.

Mr. Mattern gave the automobile more than half the road, but it is said the chauffeur turned toward them. The horses shied and threw the carriage into a ditch, the men falling out. In the runaway that followed Mr. Mattern was dragged by the feet until the horses stopped. The women escaped injury by clinging to the carriage top. Mr. Saylor suffered slight bruises. He saw the number of the automobile which, it has been discovered, is registered in Berks County.

The Henry Martin Brick Machine Manufacturing Co., of Lancaster, Pa., is installing a complete equipment for the manufacture of soft mud brick at Pennbrook, near Lansdale, Pa., for Mr. Geo. M. Fox, Jr.

PROMPT SHIPMENTS AND GOOD MACHINERY BRINGS RICH REWARD

The below written letter is only a sample of the letters that are regularly received by the Chisholm, Boyd & White Company of Chicago. The receiving of supplies and repairs promptly is no little item. It works wonders on the right side of the ledger when the annual accounting is being made, and when one purchases a machine or machinery they should always consider the record the firm has in attending to their old customers and in delivering the repairs and supplies in time.

Messrs. Chisholm, Boyd & White Company,

Cor. Fifty-seventh and Wallace Streets,
Chicago, Ill.

Dear Sirs: We are informed today from the plant that the gear that they ordered from you had reached there.

We cannot overlook an opportunity to express to you our many thanks for the very prompt dispatch that you have responded to in forwarding the few little orders that we have given you, and which are a great convenience to us in operating our plant.

The writer is in charge of several large Texas Institutions, and transacts business in an aggregate sum of a very large amount; we have never though had anyone to pay as much attention to the quick dispatch of our business as your good selves.

We also wish to tell you that our present superintendent, Mr. C. T. Jackson, informs us that in his long experience he has operated fully a half-dozen presses of different makes other than yours but for best results all the way round, none will equal the Chisholm, Boyd & White Four Mold Special.

It will no doubt interest you to know that the writer has secured four fairly good size orders for our brick out of five contracts he went after. We are expressing you some samples of our new Kiln No. 2.

Three or four contractors have visited our plant and say that there is nothing equal to it in the South.

With assurances of our best regards and highest esteem, we remain,

Yours very truly,
TEXAS FIRE BRICK CO.,
Per KAL SHWARTS,
Secretary and Treasurer.

TO MANUFACTURE PAVING BRICK AT KIRKSVILLE

The necessary capital has been raised and a company organized for the purpose of manufacturing paving brick at Kirksville, Mo. The leading business men of the city are interested in the enterprise and expect to be ready to burn the first paving brick in a short time.

The plant will be operated at the J. M. Ivie & Sons plant and the material for the construction of the kilns has arrived. It is to be hoped that the venture will prove a success as it will mean a great saving on the cost of paving if the brick can be manufactured at home and will also furnish employment for a number of men. A paving brick plant here will mean paved streets in Kirksville at a reasonable cost.

VENEER TILE BEING BURNED

The first kiln of tile is now being burned at the new plant of the Fischer Veneer Tile and Manufacturing company on the Maysville pike, Zanesville, Ohio. This new company, which is composed of Cincinnati capitalists, has erected a fine manufacturing plant on the site of the old Arcenciel pottery and as has been stated will engage in the manufacture of veneer tile.

These tiles will be used instead of weather boarding or brick for the outer walls of buildings being particularly adapted for use on residences. The sample tiles so far burned have been all that could be desired and the company now has a number of orders from local and foreign parties.

The company has spent something in the neighborhood of \$15,000 in improving the property which they purchased on the Maysville pike and in addition to new buildings has installed new machinery and has a plant which is well equipped throughout.

This is one of Zanesville's new industries which bids fair to grow to great proportions. The members of the company are very well pleased with the outlook for the business and like their location here. Several western cities have made them alluring offers to seek new locations but so far none of these has been considered since the location here is all that could reasonably be wished.

JAMES KELLY IS CAUGHT ON A BELT AND CARRIED INTO GRINDING HOPPER

James Kelly, aged 42 years, married, of No. 48 Lombard street, Pittsburgh, Pa., met a horrible death by being mangled in a separator of a brick machine at the Booth & Flinn brick yards on Ruch's Hill.

He was shoveling loose earth on a belt which carried it to a hopper used to grind and separate it. During the absence of other employes, he was caught on the belt and carried to the hopper where the machinery killed him.

PROTECT LIVES, HOMES AND PROPERTY WITH "UTICA" AND "CHILDS" EXTINGUISHERS

O. J. Childs Co., Utica, N. Y., were very busy recently shipping a car load of 500 of the "Childs" Hand Chemical Fire Extinguishers and 3,500 chemical charges to Colon, Panama, to the Panama Canal Commission.

The above order was secured after the most severe test ever given the subject of Fire Extinguishers. This test was made by the government at Washington. The "Childs" machine stool a hydrostatic test of 500 pounds held for twenty minutes, and the extinguisher expanded only one one-hundredth part of an inch under this enormous pressure, winning out against all other competitors.

They have furnished each of the following railroad companies over 700 of their Fire Extinguishers:

N. Y. C. & H. R. R. Co.
Interborough Rapid Transit Co.
Delaware, Lackawanna & Western.
Baltimore & Ohio.

Also the Borden's Condensed Milk Co. have had thousands of their machines. Not one single word of complaint has ever come to them from above parties that their machines were not entirely satisfactory.

BRICK COMPANIES MUST STOP UNDER-MINING STREETS

Poughkeepsie, August 14.—Justice Morschauser, in a decision and opinion handed down yesterday, administers a body blow to the big brick corporations that have been undermining the village of Haverstraw. He decides the companies must stop operations until a certain suit brought by the village of Haverstraw against them is settled.

The village is not seeking damages from the big brick companies, but insists that the lives of its citizens shall not be placed in danger, and Justice Morschauser, in his decision stands up for the safety of the public. The suit brought by the village is for the settlement of the question as to whether or not the brick companies shall continue to dig into the land running up to the village streets and endanger the lives of the inhabitants. The suit grows out of the catastrophe which occurred two or three years ago when several houses slid down the embankments and many lives were lost. Recently the village obtained an order restraining the companies from further operations until the suit was disposed of in court. The companies objected to the order being made permanent, and their lawyer appeared before Judge Morschauser to submit arguments against it.

The decision means the brick business in Haverstraw conducted by the companies affected by the suit will come to a standstill. The residents of the village, however, are highly pleased with the decision. The companies have been working into their banks until they have gone right up to the village streets. There would be grave danger of another accident should the companies be allowed to proceed with their work.

The opinion was filed in Rockland county yesterday. It is in full as follows:

I recognize the forceful manner in which the learned counsel for the defendants opposed the continuation of the stay, but to vacate the same and allow the defendants to continue to excavate, dig and remove the material may endanger the street, and I am mindful of the imminent danger of a catastrophe which is likely to occur if the stay is not continued enjoining the defendants during the pendency of the action from digging, excavating or removing material from the premises.

There is sufficient merit in this application to continue the stay. All digging and excavating and removing of material should cease until the final determination of this action.

The defendants claim that they will be greatly damaged by the continuation of the stay, and therefore, if the defendants are so advised, the issues in this action can be brought on for trial before Mr. Justice Tompkins at Nyack, on the second Saturday in September next, or if the parties agree, I will try the issues and for that purpose will sit in Haverstraw any day in this month when I am not otherwise engaged. The plaintiff should consent to this. In the event of the plaintiff refusing to consent, the defendants may renew motion to vacate stay without prejudice.

PECULIAR ACCIDENT AT THE PLANT OF THE FT. WAYNE PRESSED BRICK CO.

The engine room of the Fort Wayne (Ind.) Pressed Brick company was almost entirely demolished as the result of the bursting of a large fly wheel and its companion wheel on the shafting near the roof of the structure.

A. F. Butler, foreman of the plant, was upstairs conveying sand and the night engineer, Taylor White, and W. M. Stotts were outside the engine room doing odd jobs. The first to notice that something was wrong with the engine was Foreman Butler. All the shafting seemed to be running much faster than usual and as he started for the engine room the lights went out simultaneously with a terrible noise emanating from the engine room. The three men reached the engine room at the same time and on making an investigation their eyes were greeted with a scene of destruction. The large fly wheel, in bursting, had flown into a thousand pieces. One large piece of steel, weighing hundreds of pounds, had struck the left side of the brick structure with terrible force, entirely wrecking it. Another piece wrecked the wall on the opposite side and several large pieces from the companion wheel on the shafting near the roof were hurled into the air, tearing large jagged holes in the roof. Pieces of steel broke the windows and articles of machinery in the engine room and there was nothing in the room but what was damaged more or less. The engine, a large Atlas 60-horse power, was so badly wrenched that it may have to be discarded and a new one bought to take its place. Had any of the employes been in the room at the time they would doubtless have been killed.

An examination was made of the wrecked engine to ascertain the cause which led up to the accident. It was found that the governor, which regulates the steam supply through the pipes from the boilers to the engine, had broken, letting the full steam pressure into the cylinders of the engine. This caused it to "run away with itself" and the two wheels, unable to stand the strain of the terrific speed, burst.

The company employs sixteen men, who will be temporarily thrown out of employment until the damage is repaired. A. W. Butler, secretary and general manager of the concern, stated that no insurance was carried and the damaged building and engine will be a total loss. Arrangements are already being made for a new engine, which will be installed as soon as possible, in order to resume work as early as possible. The firm is pushed with orders at the present time and the enforced idleness will prove a great setback. A short time ago the entire plant was gutted by fire and has but recently been rebuilt.

J. W. STIPES HAS JUST BOUGHT SEVENTY ACRES

George M. Bennett and Mrs. E. M. Knowlton have sold their 70-acre farm about two miles north of Urbana, to John W. Stipes of Champaign, Ill., for \$200 an acre. The top is of fine clay for brickmaking and it is for that purpose that Mr. Stipes purchased it.

SAND OR LIME BRICK OR BLOCK NEWS

Harlowton, Mont., is to have a new brick yard, the company will also manufacture cement blocks, as well as cement brick.

The Iowa Cement Brick Co., of Sioux City, Ia., is a pioneer in the cement brick business, and the company is doing a very promising business.

The Houston (Texas) White Brick Co., will add two new presses to their sand-lime brick plant. They are having a large call for this brick.

Cando, N. Dak., wants a sand-lime brick factory like the one recently started at Denbigh, where brick are being successfully made of sand and lime.

The Portland (Maine) Sewerpipe and Artificial Stone Co., has been awarded the contract for work at the University of Maine grounds at Orono.

The Laketon (Ind.) Sand Lime Brick Co., has closed its factory and sold the machinery on account of the railroads not making them favorable shipping rates out of the town.

Canyon City, Texas, is building a sand-lime brick plant, the machinery has been shipped from the American Sand Lime Brick Co.'s factory at Anderson, Ind., and is now being installed.

J. H. Schmeck has been in Ottawa, Canada, for several months, superintending the construction of a sandstone brick plant built by the American Sandstone Brick Machinery Co., of Saginaw, Mich.

Idaho Falls, Idaho, is to have a pressed brick plant, the installation of which will cost \$35,000 and the brick will be made of sand and lime. The machinery for the plant is now on the way from the east.

The Reinforced Concrete Pipe Co., Jackson, Mich., are making miles of concrete tile at Elkhart, Ind., on the site of the big Indiana drain. The tile are 48 inches and the concrete is 5 inches in thickness.

The Sandstone Brick & Lime Co., of Seattle, Wash., are erecting a sand-lime brick plant near Clinton that will make 40,000 brick daily and the company is erecting another plant at Granite Falls. The capital stock of the company is \$100,000.

The Directors of the Michigan Sand Brick Co., Grand Rapids, Mich., met and elected H. W. Marsh of Manister, president and E. W. Stowe of Grand Rapids a director succeeded W. Harrison, W. Jones was chosen secretary and treasurer.

The Little Rock (Ark.) Granite Brick Co., has filed its annual certificate showing a capital stock of \$30,250, and the affairs are in good condition. The directors are: W. E. Green, T. T. Cotnam, Walter Cotter, Mort Roberts, W. H. Miller and J. W. Blackwood.

The Pocatello (Idaho) Pressed Brick & Mfg. Co., is pushing matters as fast as possible in the installation of its new plant and a new sand lime brick plant will be put in at Pebble in the near future. The officers of the company are C. W. Gray, president; Truxton Talbot, vice president; L. B. Gordon, secretary and L. L. Wall, superintendent.

MISCELLANEOUS ITEMS

J. S. Powell has just finished burning a large kiln of brick at his Kirkville, Mo., plant.

The Miller Brick Works near West Terra Haute, Ind., is building another kiln which will hold 250,000 brick.

Machinery is being received and placed at the Fertile (Ia) Clay & Fuel Co's plant, which is now being constructed.

The Hibberd Brick Co., Kearney, Nebr., is having an exceptionally good run and is shipping brick to several points in the state.

The Southern Bitulithic Brick Co., of Nashville, Tenn., has received a contract for 31,000 yards of paving work at Decatur, Ala.

John W. Stipes of Champaign, Ills., has purchased 70 acres of Clay land at \$200 per acre and will extend his brick works operations.

J. W. Pollock one of the organizers of the bricks works at Ottawa, Kansas, has sold his interest in same to J. E. Byers for a large tract of land.

Meserve & Field's who have been engaged in the brick business at Richmond, Texas, have dissolved partnership. Mr. Field retiring from the firm.

W. G. Bower has arrived in Pierre, S. D., with several cars of brick machinery from Vermillion, and will have his yard in operation at an early date.

The brick company in which J. M. Baker, Ex. Gov. Cox, and others were interested have failed to close a deal for certain real estate near Bluff City, Tenn.

The People's Brick Corporation, Baltimore, Md., has conveyed to the Crescent Brick Company the former company's plant consisting of 73 acres of land in Baltimore County.

William Sopher who was paroled from the Pontiac, Ill., Reformatory to the Supt. of the Barr Clay Co., at Streator and who broke his parole has been caught and returned to the Reformatory.

J. Robert Connelly of Terra Haute, Ind., is inspecting plants in the east. He recently purchased a fine tract of shale land near Riley and upon which he expects to locate a large brick plant.

The Richmond Clay Product Co., Reading, Pa., has been incorporated with \$5,000 capital stock. Incorporators are: Geo. F. Richmond of Hamburg; Charles B. Woods of Philadelphia and J. W. Jost of Reading.

The Western Brick & Pottery Co., Phoenix, Arizona, has been incorporated with \$50,000 capital stock. The Directors are: L. V. Munson, M. L. Kenyon, O. V. Eaton, F. A. Green and W. L. Holland of Los Angeles, Cal.

The Guthrie (Ky.) Brick & Tile Mfg. Co., has been incorporated with \$3,000 capital stock. The officers are Dr. J. M. Robinson, pres.; J. E. Leake, vice pres. and general manager and R. F. Warren, sec'ty., and treas.

Representatives of the Ticonderoga Paper & Pulp Co., are prospecting near Clarendon, Vt., three miles south of Rutland with a view of building a \$30,000 clay plant. The works is in charge of George Lair of Brandon, Vt.

The Alleghany Valley Brick Co., Tarentum, Pa., has received an order for 1,000,000 brick to be shipped to Washington, D. C.

The Findlay (Ohio) Hydraulic Press Brick Co's. plant is being dismantled and the machinery shipped to St. Louis, Mo. The plant was a large one and quite a loss to Findlay.

The new brick and tile plant of Bixler, Newman & Martin east of Cynthiana, Ind., is progressing nicely. The machinery is installed and the kilns are being constructed, John Fisher is the foreman.

It was reported in the July issue of the Clay Record that the Versailles (Mo.) Fire Brick Works was damaged by fire to the extent of \$10,000. This is incorrect, they sustained no loss by fire or otherwise.

The Hudson Valley Brick Co., Mechanicsville, N. Y., which was organized a few weeks ago has purchased the Wilson property south of town and is making arrangements to get the plant in working order.

The Bloomfield (Ind.) Vitrified Brick Co., will be incorporated with \$50,000 capital stock to build a large plant between Bloomfield & Jasonville on the Indianapolis Southern Ry. T. H. Schmitz of Chanute, Kansas is a large stockholder.

The plant of the Rich Hill (Mo.) Brick & Tile Co., has again changed hands. H. M. Booth of Rich Hill and James F. Hedges of Springfield are the new owners. The new firm will overhaul and modernize the plant to make brick, sewerpipe and drain tile.

Mapleton, Kansas, now has a large brick making plant in operation for the first time.

W. T. McClung, has resigned as secretary and manager of the Nelson Brick Co., at Mound Valley, Kansas.

Bernard F. Weber, president of the National Brick Company, Chicago, has bought 10 acres of land from Gertrude Wehrheim for \$50,000.

Several Cullom (Ills.) men went to Jackson, Minn., to investigate the establishing of a brick and tile plant there. a test of the clay is now being made.

The Houma (La.) Brick Mfg. Co., Ltd., have started at their large steam brick manufacturing plant, making 25,000 pressed brick daily. M. H. Webb is the manager.

R. C. Cromley son of Judge Cromley of Niagara Falls, N. Y., has been elected secretary and manager of the Frontier Brick Co., to succeed G. L. Gaiser, who has resigned.

The New England Brick Co., of Boston, Mass., recently shipped from its Gonic, N. H., yards several carloads of brick to Omaha, Nebr., the freight on same being \$19.50 per thousand.

A. F. Smith and W. E. Wallis have formed a co-partnership for the manufacture of brick and to do contract-work and have bought out the Elberton (Ga.) Brick Co., and will operate same at its fullest capacity.

The plant of the New York and Philadelphia Brick Co., near Whippany, N. J., has been leased to the Morris County Brick Company. The new company is putting in some new machinery and changing the plant considerably.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

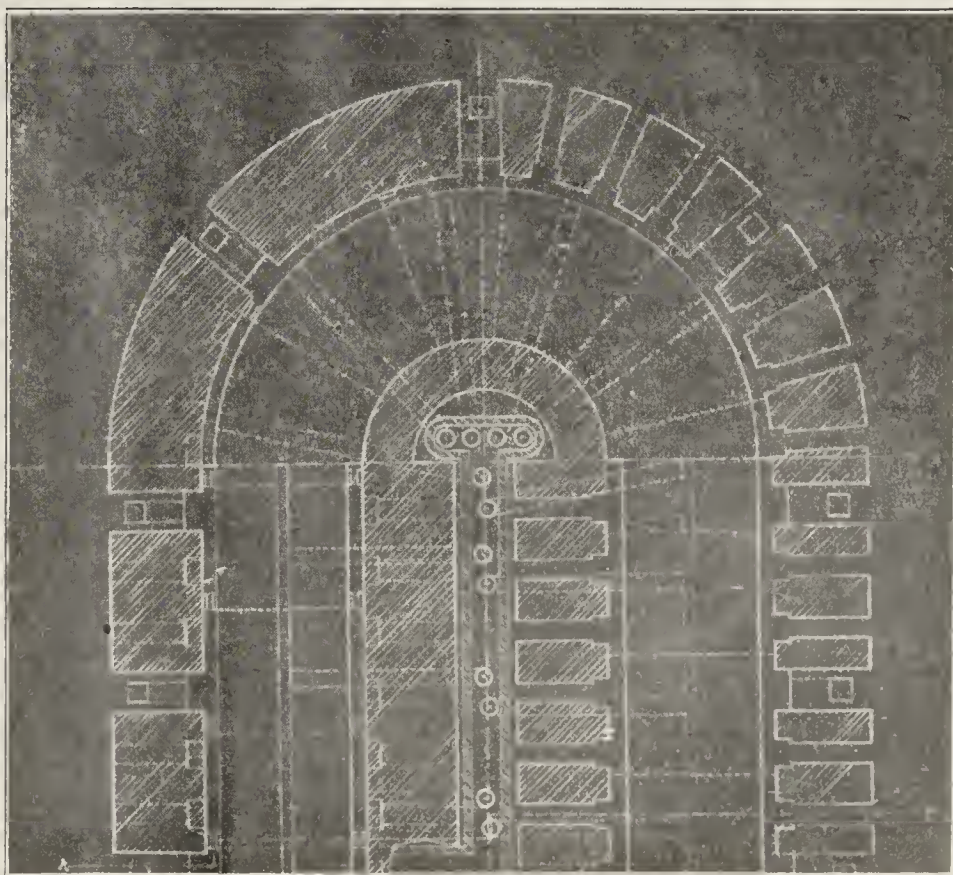
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

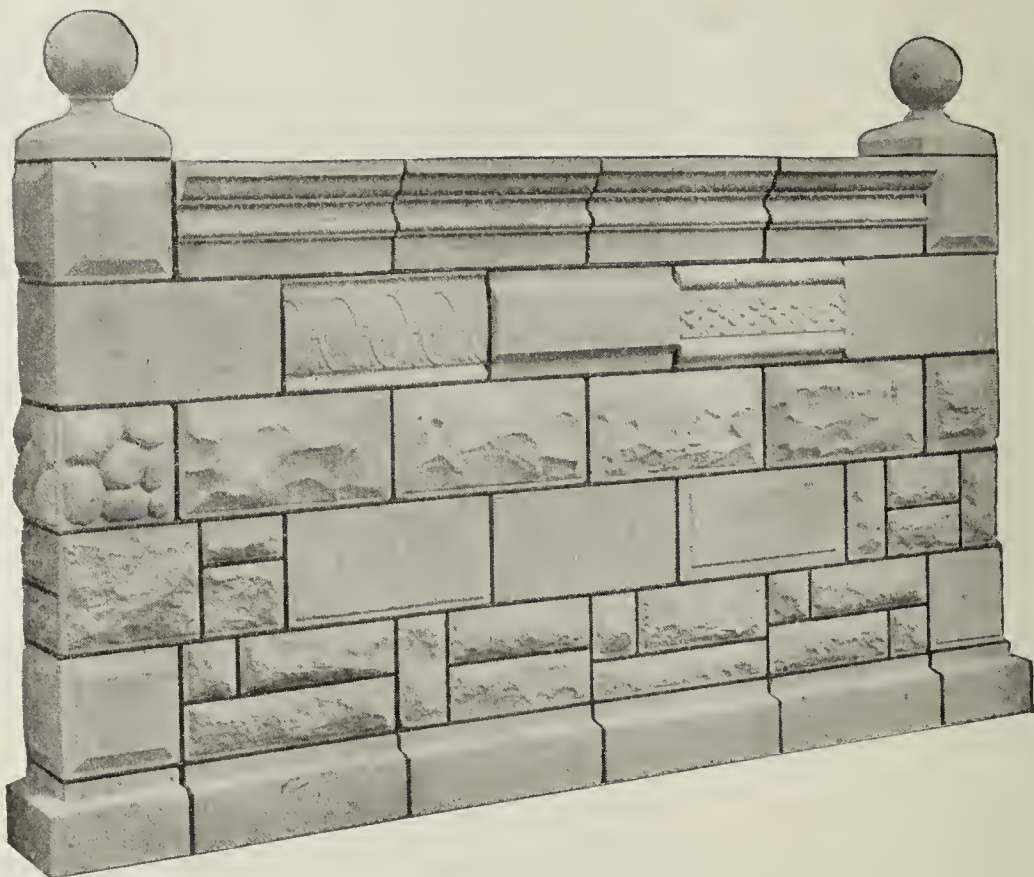
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



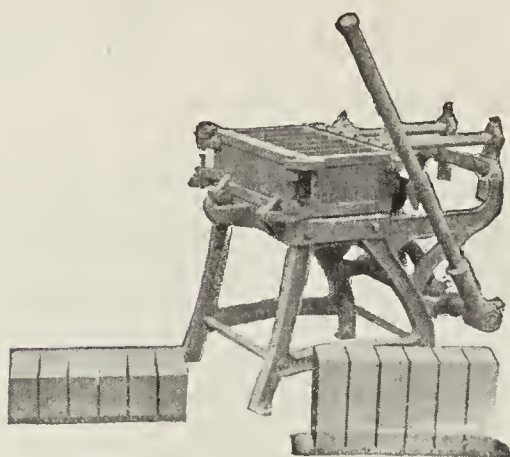
WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

What the Ideal Face Down Machine will do

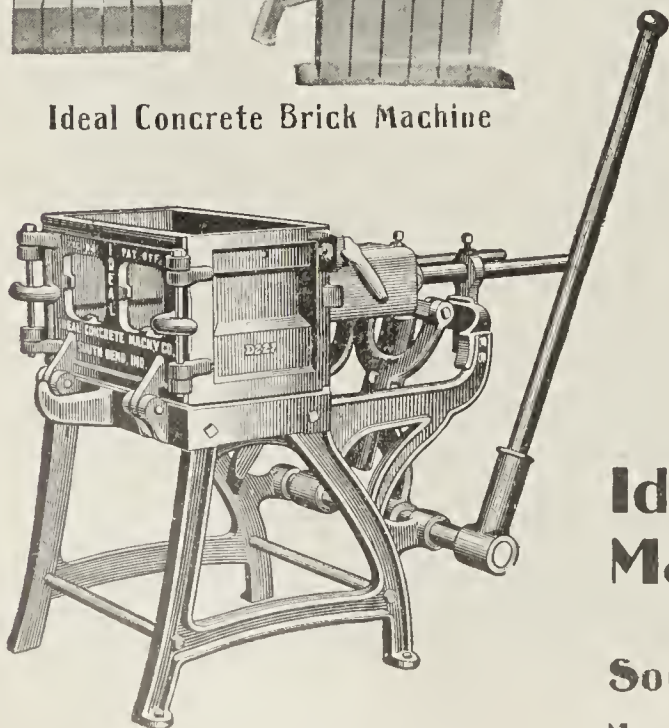
There is absolutely no limit to the artistic possibilities of the Ideal Concrete Block Machine. Of the almost endless forms and designs of blocks that a single machine can produce, samples of a few are shown in cut. The "Ideal" is the only **Face Down** Concrete Block Machine in the world with practically unlimited adaptability as to size (within capacity), shape, and design of block. In addition to the only perfect Concrete Block Machine, we have the most complete line of Cement Machines in the world: Brick Machines, Mixers, Sill and Lintel Machines, Column, Spindle, Ball, and other Ornamental Molds.



Ideal Cement Sill Mould



Ideal Concrete Brick Machine



Ideal Concrete Block Machine
In 16 and 24 inch lengths

IDEAL Concrete Machinery

More than **three thousand** Ideal Concrete Block Machines are in profitable operation in the United States alone, and we have recently closed the largest single contract for block machines in the history of the cement industry. Within a period of thirty days we have made heavy shipments to Calcutta, Shanghai, Sydney, Khartum, Valparaiso, Mexico, Glasgow, Budapest, Bucharest, and Panama. Six carloads went to a single foreign country.

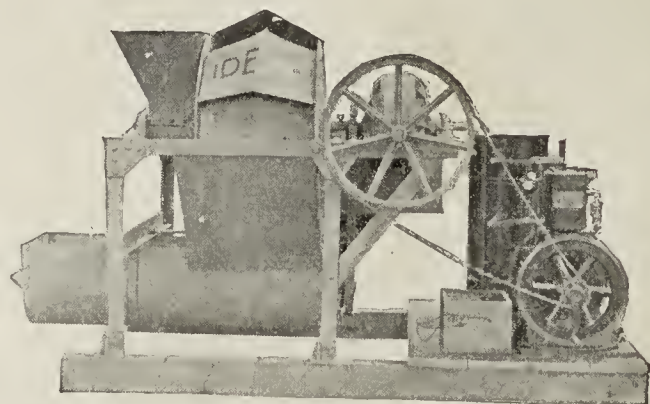
Our catalogue, magnificently illustrated, contains information of vital importance to Architects, Contractors, Builders, and those who manufacture Concrete Stone. Sent **FREE** on application.

Ideal Concrete Machinery Co.

Department W

South Bend, Indiana

Mussens Limited, Montreal,
Canada Sole Agents for Canada



Ideal Concrete Mixer

The Central Brick Exchange, Chicago, has changed its name to the Central Brick Mfg. Co.

The plant of the Weir City (Kansas) Brick Company which has been under construction since spring is now completed.

A. J. Sewart, Aberdeen, Wash., has started up his brick yard under the direction of an expert brick maker from the east.

W. R. Whitney has sold his interests in the Salina (Kans.) Vit. Brick Co., to F. C. Hadden and has resigned as secretary and manager.

Senator Clayton, owner of the brick plant at Greeley, Colo., will build a new \$20,000 brick plant so as to keep up with the demand for brick.

A leading insider of the Illinois Brick Co., states that the company is likely to issue an extra dividend of 2 per cent. at the end of the year.

Filer & Hoffman have started a brick works on a small scale at Twisp, Wash., with a view of enlarging same if the clays prove satisfactory.

The Hancock Brick & Tile Co., Findlay, Ohio, is putting in a new steam shovel so as to more cheaply handle their clay from the pit to the machine.

The New Mexico Mfg. & Contracting Co., of Belen, N. M., has just completed the manufacture of several kilns of brick used to supply the local trade.

Citizens from Stanley, Wis., have taken options on a valuable deposit of clay found at Chippewa Falls, Wis., and an effort will be made to establish a clay works.

The Brown Tile & Brick Co., Montgomery, Ind., has been incorporated with \$10,000 capital stock. The directors are: J. F. Brown, Wm. Beck and C. W. Slinkard.

The Blumburg Brick Co., Seguin, Texas, is turning out millions of red brick for the new Southern Pacific Freight depot at San Antonio. The plant is running day and night.

The Berlin Heights (Ohio) Brick & Tile Co., has been incorporated with \$10,000 capital stock by L. B. Ayers, C. A. Peake, T. S. Waldron, Samuel Ayers and L. S. Van Scrotem.

The Bair Brick Co., capital stock \$300,000 has been incorporated. Incorporators are: J. Bair, of West Manchester, Pa.; C. F. Clark of Philadelphia, and J. G. Gray of Wilmington, Del.

The Corona (Cali.) Pressed Brick & Terra Cotta Co., have organized with C. E. Kennedy of Riverside as president and treasurer; G. F. Dean, vice president; E. J. Genereau, secretary and manager.

The Ambridge (Pa.) Brick Co., has been incorporated with \$5,000 capital stock. Directors are: Henry Cooper, Bellevue, A. A. Hershberger & John F. Miller of Allegheny; Wm. F. Wilson, of Pittsburg and Thos. P. Speer of Economy.

H. B. Wiley and W. S. Cochran of Chanute, Kansas, and E. B. Jewett of Wichita were in Caney in conference with Col. Porter and others in reference to building of the Monarch brick plant. It is the intention to merge the two plants when the Monarch is built, they having one in Chanute.

The Humboldt (Kansas) Brick Co., has purchased a 65 ton steam shovel for their brick works.

O. B. Thomas has just arrived in Salina, Kansas, and will manage the plant of the Salina Vitified Brick Co.

The Eastern Illinois Brick Co., at Beecher, Ills., is erecting another large kiln shed, also laying additional side track.

According to the Greenfield, Ills., Argus a brick plant is on prospect for that city in connection with the new electric light plant.

W. S. McKissick of Adel, Ia., is looking around for a location for a brick and tile works. At present indications Mason City looks good to him.

The Richfield (Utah) Brick & Tile Co., started up its new pressed brick plant using electric motor power which operates the plant very satisfactory.

Fred Koch, president of the Twin City Brick Co., St. Paul, Minn., and Prof. Sardeson a geologist recently visited New Ulm, for an examination of the clays.

The Peoria (Ills.) Workhouse force fired their first kiln of brick last week and the construction of the second kiln has begun. They will make only 1,300,000 brick this year.

The plant of the Diamond Fire Brick Co., at Canon City, Colo., is now being overhauled and \$25,000 spent in improvements. Several new buildings and kilns will be erected.

The Greentown (Ind.) Brick & Tile Co., has been incorporated with \$12,000 capital stock by Steven Colescott, John Fell and William Willcutts. They will take over the Colescott Tile Works.

DIRECT HEAT

DRYERS

— FOR —

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

BRICK PLANT FOR SALE

Brick Plant on three railroads, within two blocks of paved streets, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg. Springfield, Illinois

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery
Secor, Ill.

A MANUFACTURING PROPOSITION

We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only a small investment, and you have exclusive territory protected by patents.

Egyptian Sheet Plaster Co.
Jackson, Mich.

BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.

Address: "Manager" Care of Clay Record
Chicago, Illinois

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.
1 Madison Ave. New York

FOREMAN WANTED

By a tile and brick plant in Central Illinois an outside yard foreman to take charge of setting and emptying kilns, car loading, etc. Address stating experience and wages desired.

A. B. CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.

39 Cortland St., New York.

50 PERCENT SAND

Fifty percent sand on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
131 Lander St., Newburgh, N. Y.

FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address

LOCK BOX 29 CARE OF CLAY RECORD
Chicago, Illinois

BRICK YARD FOR SALE

Old established yard in good town of 5,5000 people with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL
Maryville, Mo.

WANTED

A competent and experienced manager and salesman for sand lime brick factory. Address

BUSINESS MAN CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
Leesville, La.

WANTED

Wanted Stoneware Potter—both wheel and Kiln men, Write to
SPOKANE POTTERY CO.
Clayton, Wash.

FOR SALE

Two complete sets Brick-making Machinery, including Chambers Brick Machine, Elevators, Clay Rolls, Granulators, Hoists, etc., also one Frey-Sheckler Brick Machine, at present in operation.

ILLINOIS BRICK CO.
Chicago, Ill.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.

Care Clay Record, Chicago, Ill.

MEN WANTED

Three (3), or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address:

Supt. Missouri Slope Brick and Tile Co.
Dickinson, N. D.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.

L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$35.00.

C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK.
Redfield, So. Dak.

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

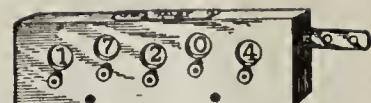
A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
Aiken, S. C.



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A BRICK TRUST; THE BRICKMAKERS' PANACEA

By W. W. PHILLIPS.

Every student of political economy will admit, however opposed to trusts he may be, that every step of progress since the world begun has been bitterly opposed by the masses. For instance, the first carriage that was ever used in England was described as "A temple of sin wherein cannibals worshipped the devil!"

All kinds of labor-saving machinery has been opposed by the working people and yellow journals, and let me say that hundreds of people must suffer and do suffer every time a machine is invented to save labor, but this question goes further than any individual interest.

The great philosopher, Jeremy Bentham, was the author and expounder of the great principle of "The greatest good for the greatest number." Now this is certainly the correct principle, and this, I believe is what the trust does.

The modern trust is the natural outcome of industrial progress. It is a significant fact that the property of the masses of people of any country can be measured by the great industrial combinations: Investigate the financial condition of any country and see if this statement isn't absolutely correct.

Thanks to the yellow journals and the demagogues of this great country, the prejudice against combined wealth is so great that a person hardly dares to speak a word in favor of what we call trusts. It is for this reason that I do not go to the subject at once. Before I advocate a brick trust I shall take the liberty of explaining what a trust is, and the purpose for which it is created. Before discussing this subject, it is necessary that the reader understand what a trust is. Mr. C. T. Dodd, the general solicitor and originator of the Standard Oil Trust, defines a trust as "an arrangement by which the stockholders of various corporations place their stocks in the hands of certain trustees, and take in lieu thereof certificates showing each shareholder's equitable interest in all stock so held. The result is two-fold: 1. The stockholders thereby become interested in all the corporations whose stocks are thus held. 2. The

trustees elect the directors of the several corporations."

No what we have a trust defined, we are in a position to see whether it is a good thing or a bad thing. The question is, does a trust injure or help the majority of manufacturers, the public, and the laborer. Nearly every one knows that the manufacturer has grown rich. The public and laborer are at a lower price than ever before. The laborer—well the labor agitator tells us that the trusts have the laborer by the throat, and control him, body and soul. They long for the good "old times" of our forefathers, when every man was a jack of all trades. One thing the labor agitator conceals—he doesn't tell his audience that in the "good old times our forefathers worked 16 hours a day for \$3.00 per month! The laborer who wants this kind of thing, will find it in Russia to-day. I know it is useless to tell an employer that the laborer has been injured by trusts or anything else. The laborer is better paid and works fewer hours, and probably does less work per hour than ever before in history. If the workingman hasn't brains, no power on earth—not even a trust—can make him intelligent. If there is any business that needs organizing, it is the brick business. By organization we could keep out unworthy substitutes and prevent injury to the public. Such as, for instance, the collapse of Hotel Bixby, in which a number of men were killed.

The Standard Oil Company has probably been more bitterly attacked, and its methods and purposes more severely condemned, than any other industrial combination in existence to-day. It is for this reason that I have selected this great trust as an example of the benefits derived from these great combinations called "Trusts." The reader may have in mind some individual who has been injured by this great company, but as I said before, this question must be considered on the broad principle of "The greatest good to the greatest number."

The following argument was delivered before the Industrial Commission by Professor George Gunton: "The Standard Oil Company, the most-hated of all large corporations, is another conspicuous illustration of this fact. The immense investment involved in the thousands of miles of

pipe lines and millions of gallons of storage capacity, which takes oil from the wells, and delivers it at the sea-board without the touch of human hand, and the immense sums expended in experimentation for an improved quantity of the product which have resulted in reducing the price of oil (in gold) 75 per cent since that corporation was organized, required tens, and even hundreds of millions of capital, which only a colossal corporation could furnish. This corporation, by its immense capital, preserves the oil industry in this country. But for it, the American market for petroleum would be supplied by Russian producers. Russia protects its oil producers by a 200 per cent tariff: we put ours on the free list. Only the competition of the Standard Oil Company through the immense economies it has developed, of which the smaller concerns now have the benefit, keeps Russian oil out of the American market. That company furnishes an unlimited cash market for every barrel of petroleum that it produces in this country. Moreover, it gives employment to 35,000 American laborers, pays \$100,000 a day in wages, and exports, in competition with Russia, into Europe and Asia, nearly one billion gallons of oil a year, bringing about \$160,000,000 in gold into this country. Here is an industry, all told, which furnishes employment to about 45,000 American laborers, paying about \$125,000 a day in wages, bringing a balance of \$60,000,000 of gold a year into the country, all of which would be lost to this country, but for the economic energy and superiority of the Standard Oil Company. Small refineries, such as those now outside of the Standard, could not hold the American market a month in competition with the Russians. In short, it has preserved the industry to this country, and at the same time improve the quality of the peoples' light and reduced its price 75 per cent; and all this without government aid, purely as a highly-developed productive enterprise, competing against the government-aided capital of Russia. I could go through the whole list of industries where great improvements have been made and large reduction in prices accrued and substantially the same facts will be found."

This statement of Professor Gunston requires no comment; it is self-explanatory. He has only states facts. Now I ask, why not organize a brick trust and reap the fruit of combination, and at the same time make a better product, if possible, and make a cheaper product. The advantages of a brick trust are: (1) It would reduce the cost of production by enabling us to obtain better labor, by having fewer highly paid officials, by giving us a better organization, and by enabling us to take advantage of the most approved scientific methods, and it would stimulate invention. (2) For the reasons above stated, it would bring larger profits to the stockholders. (3) It would increase the brick business, because we could thoroughly expose every unworthy imitation that unprincipled manufacturers seek to thrust on the innocent public. It would enable us to lower the price of our material and thus increase the consumption. It is generally believed that the purpose of the trust is to raise prices. Such is not the case. The real intention is to lower the price. Two notable instances are the Manhattan Railway in New York, and the London Gas Com-

pany, London, England. The first of these had the exclusive right to run their cars on certain streets in New York City, and they had a ten-cent fare. They reduced the fare to five cents and their profits nearly doubled. The other case, the London Gas Company, after years of unsatisfactory competition in the gas business, the city council of London granted the above mentioned company the exclusive right to make and sell gas in the city of London. Immediately "business picked up." Now the cheapest gas, as well as the best quality in the world, is sold in London. And this company leads all others in profits. Clearly, it is to the interest of the manufacturer to supply the demand cheaper if possible. Combination makes it possible. Study over it. (4) It would give us uniform freight rates, and it would give us lower freight rates. This, of course, would be discrimination in freight rates, and I know that a great many people are ready to condemn this practice without considering whether it is right or wrong. Read what Wm. W. Cook, the great corporation lawyer of the New York bar, has to say on the this question:

"It has been said that it is legal for a railroad to give a reduced rate to particular persons. A carrier may by special agreement give reduced rates to customers who stipulate to give it all their business, and refuse those rates to others who are not able or willing to so stipulate; provided, the charge exacted from those others is not excessive or unreasonable." Now read what the Supreme Court of Pennsylvania says in the carefully considered case of *Hoover v. Pennsylvania R. R.* (1893). The Court carefully reviewed the authorities and held *a railroad might charge more for the transportation of coal to the local dealers than they charged to manufacturers*, and that *even a statute against "undue or unreasonable discrimination" for a like service does not invalidate such discrimination between consumers*. This, and a number of other cases, are cited in Cook's Corporation Law books. (6) We could borrow money at a lower rate of interest, because we could give better security. Now let no man underestimate the value of this borrowing. For instance, suppose we have a \$10,000,000 trust, and we need \$5,000,000 for operating expenses. Now a well-managed concern should make at least 10 per cent on the capital employed. Yet on account of our gilt-edge security, we are enabled to borrow \$5,000,000 at 4 per cent. Now see what we gain. Four per cent of \$5,000,000 is \$200,000. That's what we'd have to pay for the use of the five million. Ten per cent of \$5,000,000 is \$500,000. That's what we'd get for it. The difference between \$200,000 and \$500,000 is \$300,000. That's our net profit on the borrowed money. Of course, an individual can take advantage of borrowing the same as a corporation, but usually he must pay a higher rate of interest, and he cannot borrow as much money as a corporation. (7) Prof. J. W. Jenks, the expert agent of the United States Industrial Commission, after twelve years of investigation of the "trust" problems, came to the conclusion that "The combination *may* so increase its power as to injure the wage-earners by compelling them to accept lower wages, or to work under less favorable conditions than would be granted by competing concerns. So, too, the power exercised, ap-

parently arbitrarily at times, of closing part of the plants to avert a strike, or even to affect the stock market, is dangerous."

We don't want the laborer to work for less wages, and we don't want to affect the stock market, but we do want to avert strikes, if possible. We, the American people, pay higher wages than was ever paid for labor. Let us keep the good name, and let us put an end to strikes. Three things are necessary to create wealth. Labor, Capital and Brains. Quarrels do not create wealth. Let's quit quarreling.

I know the foregoing principles will be rejected with scorn by some people—well-informed people, too, some of them. That doesn't prove that the suggestions are not good. Commodore Vanderbilt laughed to scorn Westinghouse's plan of stopping a train of cars with wind.

Napoleon Bonaparte, probably the greatest man the sun ever shone on, after a five minutes' interview, rejected Robert Fulton's steam-propelled ships. Had he accepted the offer, he would have ruled the whole world, and St. Helena would not be famous as the place of Napoleon Bonaparte's banishment. There are others too who will reject this plan. The other man who can see nothing good in a combination. He probably has no well-defined reason for his disapproval—he is a "knocker." He is that individual who is so bigoted and narrow-minded that he labors under the delusion that nothing can possibly succeed without his approval. But it can.

In conclusion, permit me to say that if any one has any question to ask about "Trusts," I shall be glad to answer them to the best of my ability. If any one has any criticism, I shall endeavor to satisfy the critic.

I defy any living man to show that combinations are bad. Of course there may be individuals connected with our great corporations who are unprincipled, but the same kind of men are connected with our government. Yet no fair-minded person wants to destroy the government on that account. Our churches have members who are "grafters," but let's don't destroy the churches on that account. Combined wealth does the greatest good to the greatest number. Let's have a brick trust.

HUDSON RIVER BRICK YARDS WILL CLOSE OCTOBER 1

The Brick Manufacturers' Association of the Hudson river held a meeting August 21, at Newburg, N. Y., 75 of the 125 members of the association being in attendance, with President William K. Hammon of New York, in the chair. The meeting was called for the purpose of ratifying the action of various committees which made reports.

Last spring the association held a meeting for the purpose of deciding on the date at which work should start in the brickyards of the Hudson valley. The decision was to start on May 13. At the session it was decided to suspend work in the yards October 1. This will shorten the season about two months, one at the beginning and another at the end of the season. It was reported that bricks are now at a fair price, bringing from \$6.50 to \$7 a thousand.

Brick manufacturers were present from all points along the Hudson river.

THE CEMENT INDUSTRY IN 1906

The production of cement in 1906 amounted to the enormous total of 51,000,445 barrels, valued at \$55,302,277, exceeding by 10,897,137 barrels in quantity and \$19,370,744 in value the production of 1905, which had been the banner year. Classified according to character the production was as follows:

	Barrels.	Value.
Portland cement	46,463,422	\$52,466,186
Natural cement	4,055,797	2,423,170
Puzzolan cement	481,224	412,921

These figures are reported by the United States Geological Survey in an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," and are somewhat greater in the preliminary statistics of production issued by the Survey early in the year, the difference being due to the fact that some of the returns were received too late for use in the first statement.

The most prosperous branch of the industry is, of course, the Portland cement branch, whose growth has been of the most phenomenal character. Twenty years ago, when the Portland cement output of the entire United States stood at about 250,000 barrels against nearly 7,000,000 barrels of natural cement, the first attempt was made to introduce the rotary kiln for the manufacture of Portland, the company, exploiting the new process proudly claiming the ability to produce 30,000 barrels of cement per annum, and to triple this quantity as soon as the necessary grinding machinery should be added. To-day it is not considered in the least sensational if a company announces the capacity of its plant at 3,000 to 5,000 barrels a day, while the yearly production of the large plants runs well into the millions of barrels.

The decline of the natural cement industry has been gradual, but as steady as the increase of the Portland branch. In 1906 the effect of this decline has seemed to be even more widespread than in the preceding year. The owners of many plants have allowed them to remain idle, some have turned their attention to lime-burning and kindred employments, and a few have dismantled the old plants and established buildings and machinery for making Portland cement. Since some of the limestone, known as "cement rock," from which the natural cement is made, forms an equally good base for Portland cement, the last course would seem to be both logical and wise.

The growth of the slag or puzzolan branch of the cement industry is interesting because of its steadiness. The advantage of the industry is that it consumes a product of steel and iron foundries which has for years been troublesome to dispose of and has been regarded as waste. This variety of cement is not burned in rotary kilns and should not be confused with Portland cement made with slag as a basis and burned in rotaries.

Although the prices at which cement was sold in 1906 were higher than those which prevailed in 1905, they were not inflated but resulted from a normal growth in demand. The producers made no complaint of prices, but protests against the insufficient car service provided for the delivery of orders were made from every part of the United States.

That the quality of cement exported by the United States to foreign countries is not so large as it should be is probably due to the great home demand, but with the continued increase in production, the foreign trade can not be long neglected.

The statistics of the industry have this year, as in the past, been prepared by L. L. Kimball, and the report is prefaced by a chapter on Advances in Cement Technology by Edwin C. Eckel. The pamphlet is now ready for distribution and may be obtained without cost by applying to the director of the United States Geological Survey at Washington.

EFFLORESCENCE OF BRICK*

By J. C. Jones, Champaign, Ill.

During the reign of Napoleon III of France, while a large part of Paris was being rebuilt, the walls of the new buildings became coated with unsightly splotches of a white crystalline substance known as efflorescence, or whitewash. The cause and cure of the phenomena so baffled the scientists of that time that the emperor offered a reward of \$100,000 to any one who would discover a means of preventing its occurrence. Many of the prominent scientists of Europe at once investigated the problem, but beyond determining the composition of the efflorescence little was accomplished. (Brick, vol. VI, p. 195.) In our own country the first published notice of efflorescence appeared about the year 1882, at which time there was an unusual amount of it on buildings, both here and abroad. It appeared not only on buildings under construction, but also on those never known to be troubled before.

Among the several scientific societies which took up this problem was the Academy of Natural Sciences of Philadelphia. They reached the conclusion that the cause of the trouble was principally magnesium carbonate. Many of the recent writers mention that the efflorescence was supposed to be nitre of saltpeter, evidently because it resembled the deposit which appears on stable walls which have manure and other refuse piled against them. Seger seems to have been the earliest of the ceramists to have studied this problem, and he demonstrated that the efflorescence is not saltpeter but rather, that it is generally sulfate of the alkalies or alkaline earths. Seger was followed by several other German investigators, among whom Hans Guenther seems to stand foremost. Guenther laid particular emphasis on the role that pyrite plays as well as on the reactions that take place between the salts in the brick and mortar. In our own country, Dr. Otto Gerlach clearly stated the possible reaction of the lime in the brick with the sulphur in the kiln gases that cause the formation of soluble sulphates.

In spite of this work that has been done, the entire cause and prevention has not been found. Efflorescence is as abundant as ever and can be found on new and old buildings alike. What has been done, however, has been a great step in advance, and by far the greater part of the unsightly stains on our buildings can be done away with if brick manufacturers and builders take the precautions already determined. Each investigator has laid particular emphasis on the particular cause he has been investigating, leaving the impression that it was the cause of all efflorescence. The fact is, there are a number of causes for the trouble, and a number of precautions to take. It is the purpose of this paper to gather together as far as possible all of the causes and means of prevention known to the writer in the hope that it may aid those who are endeavoring to overcome these unsightly stains on our brick.

Effect of Efflorescence.

It has been stated that the crystallization of salts on the surface of brick would have the same disintegrating effect as the formation of the ice crystals and cause the brick to weather so much more rapidly.¹

On the other hand, it has been suggested that efflorescence is of benefit to the brick when it is burned because it concentrates the fluxing material, calcium, etc., near the surface of the brick. It was observed that the whitewashed bricks were the better vitrified. This is, however, an open question.

While efflorescence may or may not harm the brick in a mechanical way, it certainly does harm its appearance, and means an actual monetary loss when the appearance of the brick is part of its intrinsic value as in a face brick.

Kinds of Efflorescence.

For convenience in discussing the sources and causes of efflorescence it is best to divide it into two classes, first, that which appears on the brick in the kiln or kiln white, and, second, that which appears afterwards or wall white. The kiln white is burned into and is a part of the brick, while the wall white is powdery and can be rubbed off. Kiln white is often subdivided into dryer white, or that which originates in the dryer, and kiln white, or that which originates in the kiln. While this distinction is often convenient in assigning the cause of a whitewash on the brick, yet it is often impossible to distinguish between the two without experimenting. In general, however, dryer white is almost always brought to the surface of the brick through the evaporation of the water and so appears in small pimply crystals, while the kiln white is most often caused by the reaction of the kiln gases and the lime in the brick and appears as fluffy clusters. This is not a sure means of distinguishing the kiln and dryer whites, as kiln white may also come from evaporating water, and the dryer white may also be formed, in case of a waste heat dryer, by the reaction between the sulphur in gases and the lime in the clay. For the purpose of this paper I shall not distinguish between kiln and dryer white, as they are identical in origin and composition.

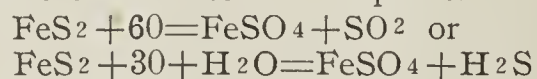
Composition of kiln white. Analyses of kiln white show it to be almost entirely calcium sulphate with small amounts of magnesium and alkaline sulphates and occasionally alum.

In order to form some idea of the relative power of the various salts to cause efflorescence a series of trials was made containing 0.5 gram each of sulphates of calcium, magnesium, and aluminum, the carbonates of calcium and sodium, and chloride of sodium. These salts were added to 100 grms. of clay that had been previously washed thoroughly, the mass formed into bricketts, and burned under oxidizing conditions. The sulphates caused by far the greater amount of efflorescence, the alum coating the trial entirely, the others covering the sides. The carbonates gave a thin coating of efflorescence, the sodium much the heavier of the two, and the sodium chloride simply discolored the trial, making it a little darker. From this it was seen that the sulphates were the most dangerous, but that any soluble salt is liable to cause trouble.

Source of kiln white. The sources of the kiln white salts may be said to be in the clay, in the water used in manufacture, or in the kiln gases, or perhaps in many cases all three of the sources named.

Efflorescence from the Clay.

Practically all brick clays contain or have contained sulphur in the form of iron pyrites. When the clay is exposed to the action of the air and its weathering influence, which action extends to the permanent water line, iron sulphide or pyrite oxidizes to iron sulphate.¹

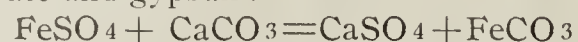


The iron sulphate alters with the further addition of water and oxygen to limonite, setting free the sulphur as sulphuric acid.



This sulphuric acid then enters into solution and reacts with the calcium, magnesium, aluminum, and other bases originally in the form of carbonates, silicates and chlorides, and forms sulphates as gypsum, alum, etc.

Again, the iron sulphate may react directly with the calcium carbonate, which is nearly always present, and form iron carbonate and gypsum.



As the iron in an unoxidized clay is usually in the form of either the sulphide or carbonate, and since gypsum is

*University of Illinois Bulletin No. 4

also a common constituent, the reaction between the sulphate of iron and carbonate of lime is probably more common than that of mere oxidation and hydration. Both reactions are, however, initially oxidation. From the foregoing it will be readily seen that the amount of whitewashing sulphates formed in a clay depends directly upon the extent to which the clay has been exposed to oxidizing influences. The oxidizing zone in the earth's surface extends down to the permanent water level. In this zone the process of oxidation is at its maximum, and consequently the changes from the insoluble sulphides to soluble sulphates takes place here most rapidly. The sulphates, once formed, are soluble and will be removed by solution by the water percolating through the clay. As the clays are, as a rule, very compact and impervious, the water circulates through them very slowly. Consequently until the clay has been opened up by the action of frost and the roots of vegetation and made more pervious, the sulphates are not removed to any appreciable extent.

When soluble sulphates are present in the clay they appear on the surface of the green brick at it is drying. They may be concealed, in fact generally are, by the similarity of their color and that of the brick, but as the brick is burned the sulphates stand out as white specks on a darker background and the whitewash is brought out apparently in the kiln. Since the evaporation of the water contained in the green brick can only take place at the surface the water of the interior must come to the surface through the action of capillarity. The soluble salts are brought out in solution by the water and the water evaporating leaves the salts concentrated on the surface. Perhaps I can make this clearer by an actual case. A clay whitewashed and by experiment it was found that the trouble lay in the soluble salts of the clay. Analyses of the clay showed 0.75 per cent sulphur trioxide, of which 8.92 per cent, or 0.065 per cent, in terms of the clay, was soluble. Analysis of the face of the dried brick gave 1.30 per cent of sulphur trioxide, of which 40.77 per cent, or 0.56 per cent in terms of the clay, was soluble. The gain in sulphur by the face of the brick will be readily seen to be entirely of the soluble form. In other words, the soluble salts had been collected on the face of the brick by the process of drying. It is also interesting to note the very small amount of sulphur trioxide, only 0.65 per cent, about 7.95 gram, or 0.07 of an ounce per brick that it takes to cause decided efflorescence.

As before stated, nearly all the shales and fire clays contain iron pyrites. That part of it which escapes the action of the weather enters into the brick in its original form. Although it does not cause either kiln or dryer white, it is a very large source of the wall white and it is simplest to consider it at this point. Pyrite is peculiar in the fact that it will part with one molecule of its sulphur quite readily at the comparatively low heat of 400 degrees C., but holds tenaciously to the other until at least 900 degrees C. In fact, there seems to be good reason to believe that it is not driven off at all except under good oxidizing conditions.¹

The first molecule of sulphur, however, is set free at a time when there is an abundance of water and oxygen in the kiln gases, and as it passes the lime and magnesium carbonates in the clay it combines with them to form sulphates. These, once formed, are not decomposable under ordinary conditions and remain unnoticed in the brick until they are laid in the wall. Then, due to the leaching action of the rains and the water passing through the wall from the water pipes, gutters, and foundation, they appear as efflorescence.

Efflorescence from kiln gases. The sulphates in the clay are not the only cause of whitewash, however. Calcium carbonate is nearly always present in the clay, often in large quantities, and occasionally magnesium. As these are

comparatively insoluble, they are not carried to the face of the brick to any extent during dryness and consequently do not form a large part of the kiln white. If, however, they lie at the surface, especially if in the form of pebbles, they are almost certain to form kiln white by reaction with the sulphur dioxide of the kiln gases, while that which lies in the interior, reacting with the kiln gases, forms the sulphates which come out later as wall white.

Guenther was the first to prove this in a positive manner. He burned feldspar, kaolin, and marl at a red heat in a furnace with sulphurous fumes present and found that while the feldspar was unaffected, the kaolin and marl were attacked with the formation of calcium, sodium, and other sulphates. Further, with mixtures of clay and chalk the efflorescence increased with the increase of the lime.

Gerlach, in somewhat similar experiments, found that

1. In clay containing pyrite and calcite burned in a flame free from sulphur the amount of sulphates was increased five times.
2. When both clay and fuel contained sulphur the increase in sulphates was 20 fold.
3. When the clay contained calcite and the fuel sulphur the increase in sulphates was 40 fold.
4. When clay and fuel were both free from pyrite, there was but slight increase.
5. When the clay contained a large amount of pyrite but no calcite, and the fuel was free from sulphur, there was but slight increase.
6. When both fuel and clay contained pyrite but no calcite, there was but a slight increase.

From these experiments it can be readily seen what an important role the calcite in the clay and the sulphur in the fuel play in the formation of the efflorescence.

The coal burned in kilns, especially bituminous coal, contains sulphur in the form of iron pyrites or marcasite, as well as free sulphur. This is generally easily seen in the coal as bright specks or seams and is commonly known as sulphur. When the coal is burned, the iron sulphide is oxidized and sulphur dioxide, a gas, results. This passes through the kiln with the other gases. Seger¹ tried the experiment of condensing the water vapor in the gases of a burning kiln and an analysis showed considerable amount of sulphuric acid and some hydrochloric acid. As most chlorides are quite volatile, it is probable that the hydrochloric acid does not play any large part in the formation of whitewash, but passes out into the open air. The sulphuric acid, on the other hand, reacts with the carbonates and other calcium salts to form sulphates which are stable under all kiln conditions except a reducing fire. Thus it is possible that a clay that did not originally contain any sulphates could show whitewash, and in fact the work of Guenther and Gerlach has shown that this is a very fruitful cause.

It is an often observed fact that the bricks in the colder parts of the kiln show whitewash when the rest of the ware is free from it. This can be explained by the fact that the bricks in the warmer parts of the kiln begin to give up their water before the other brick have become heated. These colder brick then would condense this water vapor containing sulphuric acid from the kiln gases and absorb it. The absorbed acid acts on the lime, etc., forming sulphates which are left on the surface of the brick.

Again it is a fact that a brick set wet will whitewash. This can be explained by the absorption of the sulphurous gas by the water in the brick and as the acid will penetrate all parts of the brick through diffusion sulphates will form and be carried to the surface of the brick as it dries out.

¹ (Orton. Role played by iron in the burning of clay wares. Transaction Cer. Soc., Vol. 5, p. 398.)

There are probably other salts, chlorides, nitrates, etc., which occur in minute quantities that contribute their share to the trouble, but they are very rarely present in large enough quantities to cut any figure.

Efflorescence from the water. The water used is generally drawn from wells or streams and always contains salts dissolved in it. These are principally calcium and magnesium carbonates, sodium sulphate and other chlorides, phosphates, and nitrates. As a rule these do not amount to more than from .02% to .05% and since there is only approximately 800 grams of water used in each brick, this would introduce only 0.4 gram of salt, an amount entirely too small to cause trouble. If the salts rise much about 0.05%, the water may be an important factor in causing efflorescence, since the principal salts, calcium and magnesium carbonates, combine with the sulphurous fumes of the kiln gases as has been explained before.

Means of prevention. The principal causes of the kiln and dryer white lie, then, in the sulphates and carbonates of the clay, and in the sulphurous gases in the kiln. The remedies, therefore, must be applied with this in view.

The following means of prevention are suggested:

1. Use the clay before the soluble salts form, i. e., unweathered.

2. Remove the soluble salts entirely from the clay, i. e., weather it thoroughly, this causing the washing out of the salt.

3. Transform the soluble salts to a harmless form by precipitation.

4. Prevent the concentration of the salts on the surface of the brick by rapid firing.

5. Remove the whitewash in the kiln by means of a reducing flame.

6. Coat the brick with some combustible substance that will remove the whitewash as it burns off.

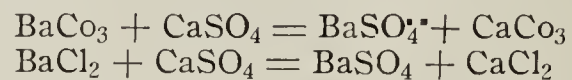
1. Since the sulphates in the clay nearly always result from the weathering of its pyrite, it is often possible to avoid the whitewash simply by using the clay fresh from the bank, rejecting that which has been exposed to the weather any length of time. This is only possible with clays that lie below the permanent water level. This use of the fresh clay, however, leaves the pyrite in the clay, and as has been shown, it will sooner or later come out as efflorescence on the walls. While the manufacturer is thus enabled to produce a clean brick, he is simply passing the trouble on to the user of his wares.

2. Since the whitewashing salts are all soluble or can be rendered so by weathering, it is possible to remove them entirely by exposing the clay to the action of the air, rain and frost as long as is necessary. As the action is slow and will not penetrate the clay unaided, the clay should be spread in thin layers and worked over occasionally. As the object is to remove the salts entirely, the ground upon which the clay is spread should slope enough to thoroughly drain the water away from the clay after it has done its work. This process not only removes the whitewashing salts, but also increases the plasticity of the clay. The process takes several months and is too expensive on that account for most brick plants.

It is possible to remove those soluble salts already formed in the clay by washing it. In using this process it must be borne in mind that the object is to remove the impurities and soluble salts and consequently a good supply of water must be at hand. In one case, at least, the water was being used over and over again until gypsum crystals of good size could be found quite plentifully in the storage tank of the washer. As in the process of weathering, the washing not only removes the salts but gives a more homogenous and better product. Its only disadvantage is the increased

cost which need not be large if a good supply of water is to be had.

3. The method in most common use to transform the soluble into insoluble sulphates is to mix small amounts of barium carbonate or chloride with the clay. When either of these salts are introduced into the clay containing soluble sulphates the barium combines with the sulphur and forms barium sulphate, one of the most insoluble compounds known.



As the barium sulphate is very insoluble and is not decomposed during the burning the sulphur is firmly locked in the interior of the brick as long as the brick endures.

Barium carbonate is also a very insoluble compound and must be ground finely and very thoroughly mixed with the clay to accomplish the end that is sought. A German writer recommends that it be ground in a tube mill together with fine sand, which has the effect of soon reducing it to the very fine powder that is wanted. The correct amount, which necessitates a chemical analysis for its determination, is then added to the clay as it enters the pug mill. The carbonate is perfectly safe to use, as neither an excess of the barium nor the calcium carbonate formed will cause efflorescence. Its success depends on the thoroughness with which it is ground and mixed with the clay.

The chloride, on the other hand, is soluble and consequently does not need much care in grinding and mixing. As it is soluble, it is rather dangerous to use, for any excess is carried to the surface of the brick and forms there a whitewash with the sulphur in the kiln gases. Its by-product, calcium chloride, is also soluble and is liable to form whitewash in the same way. The Germans frequently use both the carbonate and chloride, adding enough of the chloride to overcome most of the whitewash and depending on the carbonate to take care of whatever whitewashing salts remain.

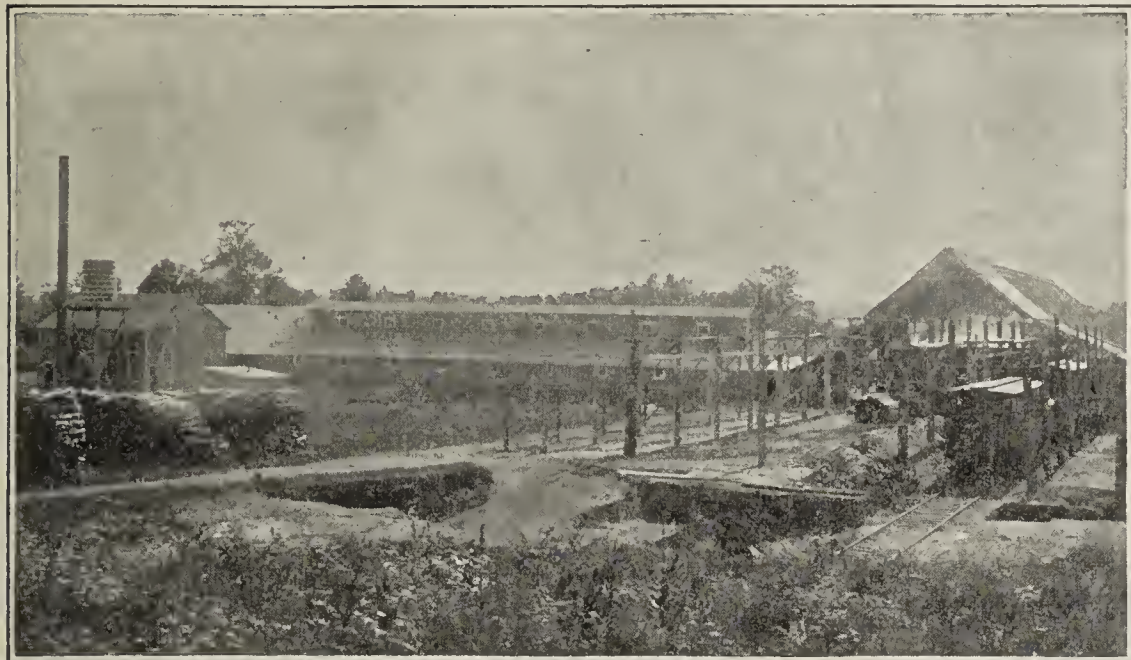
4. It is often possible when a clay shows a tendency to whitewash, to hold the whitewash inside of the brick by drying as quickly as possible. The mechanics of this is simple, and depends on the property of capillary tubes.

A simple experiment suggested by Dr. Lincoln of this University will make this clear to any one who will try it. If a strip of filter paper be hung with one end in a solution of potassium permanganate, as the solution ascends the paper it will soon be noticed that the water is traveling faster than the permanganate. The clear strip of the water will grow broader until the top of the paper is reached. This is due to the fact that the wet paper has a stronger attraction for the salt than the water, and consequently the salt cannot travel until enough of it is attached to the fibres of the paper to allow the water to draw the salt higher. Just why this should be is not known, but it is the phenomenon chemists have named absorption. So when the brick is dried quickly the water is evaporated before the salt reaches the surface in sufficient quantities to cause trouble. When the clay will not permit of rapid drying this method cannot be used.

5. The sulphates once formed cannot be decomposed or removed in an oxidizing flame at any temperature ordinarily reached in the kiln. In a reducing flame the sulphates are reduced at temperatures of 1000° C. to sulphides. The bases enter into combination with the silicates of the brick, while the sulphur is driven off with the gases. By use of this principle it is possible to drive off the whitewash by finishing the burn under reducing conditions. This has the disadvantage of darkening the color of the brick and also causing the slagging of the iron into a ferrous silicate thus starting fusion prematurely.

DRYING AND HANDLING BRICK

The accompanying photographs were taken at the plant of the Jacobs Brick Company, Berlin, Connecticut. Fig. 1 shows exterior of the brick plant, showing a "Martin Patent System" Brick Dryer building in the back ground



which is a 50,000 capacity Steam Brick Dryer, fully equipped for drying and handling the product in a most satisfactory manner. Fig. 2 shows the interior view of the Dryer at the receiving end plainly showing the "Martin" Automatic Cable Delivery System running down two alley-ways, right and left. You will note the use of the Gravity Conveyors taking the green brick from the dumper to the cable, on the right hand side, also note the gravity carrier that takes the empty pallets from the lower cables. The cable on the left hand alley-way is used by dumping the brick on to the pallets just over the cable.

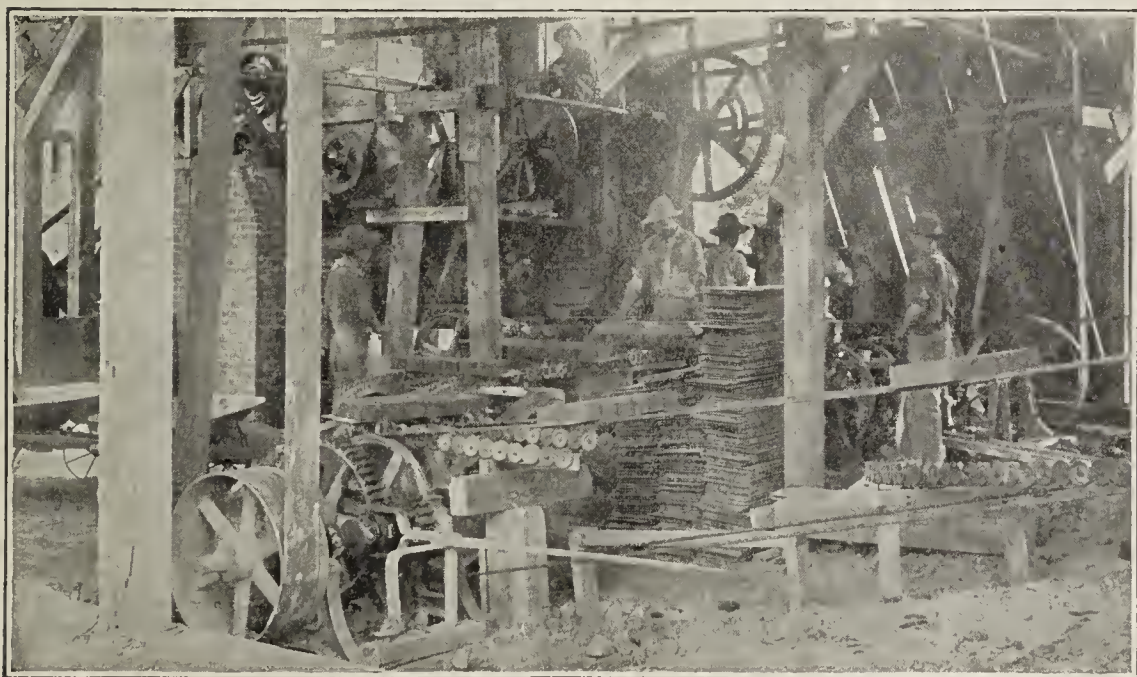
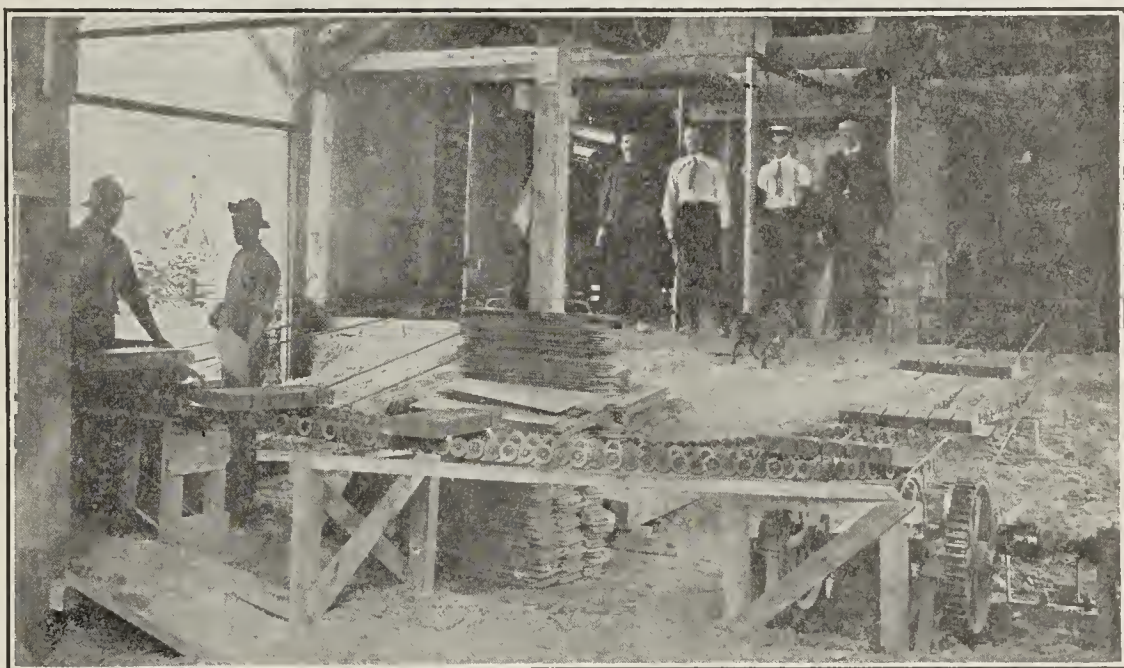


Fig. 3 shows the same gravity turn but a different view, and in this cut it illustrates the incline that was necessary on this plant to convey the brick up hill so as to conveniently get to the entrance of the "Martin" Dryers and shows

the thoroughly practical use and labor saving device.

This is one of the many installations recently erected by the Henry Martin Brick Machine Mfg. Co. of Lancaster, Pa., and we are advised that this addition to the Jacobs brick plant is a most satisfactory investment throughout.

SANITARY DISTRICT GETS STRIP FROM BRICK CONCERN

By the closing of a deal between the sanitary district and the National Brick company, Chicago, which gives the district half a mile additional right of way for its channel through Evanston between the lake and the north branch, and provides for the removal of spoil from the channel without cost to the district, the completion of the canal is brought closer and a considerable sum of money is saved, according to R. R. McCormick, president of the sanitary district.

The sanitary district acquires a strip of land through property owned by the brick company half a mile long and 395 feet wide. The company agrees to dig a channel through the prop-

erty eighty feet wide and thirty feet deep.

The only consideration given by the district in exchange for the property is the spoil of the channel for four and a half miles north from the Northwestern railway tracks to a point below the brick plant.

"This arrangement will result in a big saving to the trustees," said President McCormick. "We should have been obliged to dispose of the clay from the channel, which would have cost us as much again as the expense of excavation.

"Now we can go ahead with that part of the work. The brick company must remove the spoil within a specified time, and we can devote all our attention to digging. We should be able to complete the channel by 1910.

be able to complete the channel by 1910.

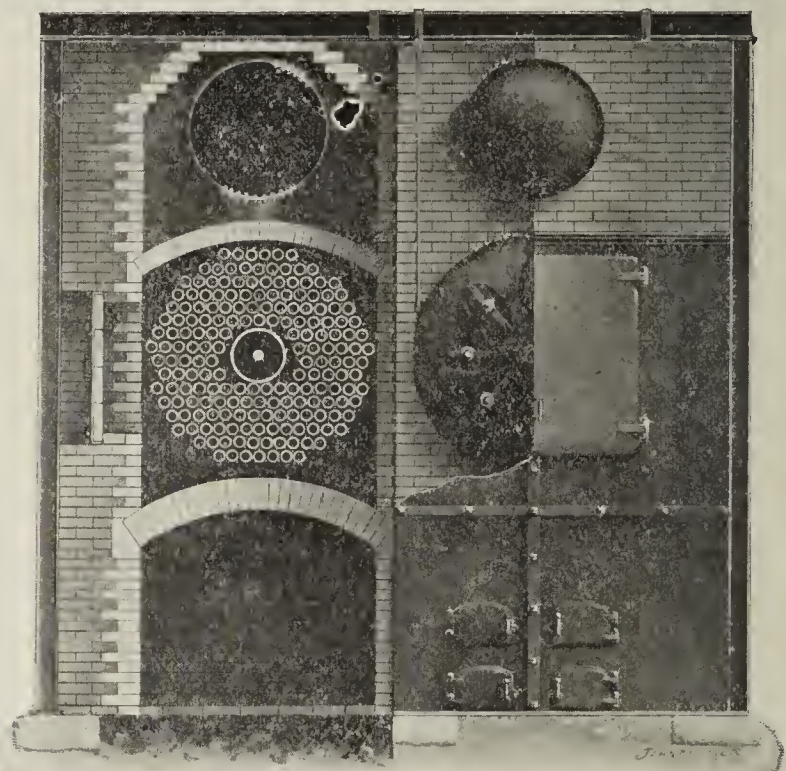
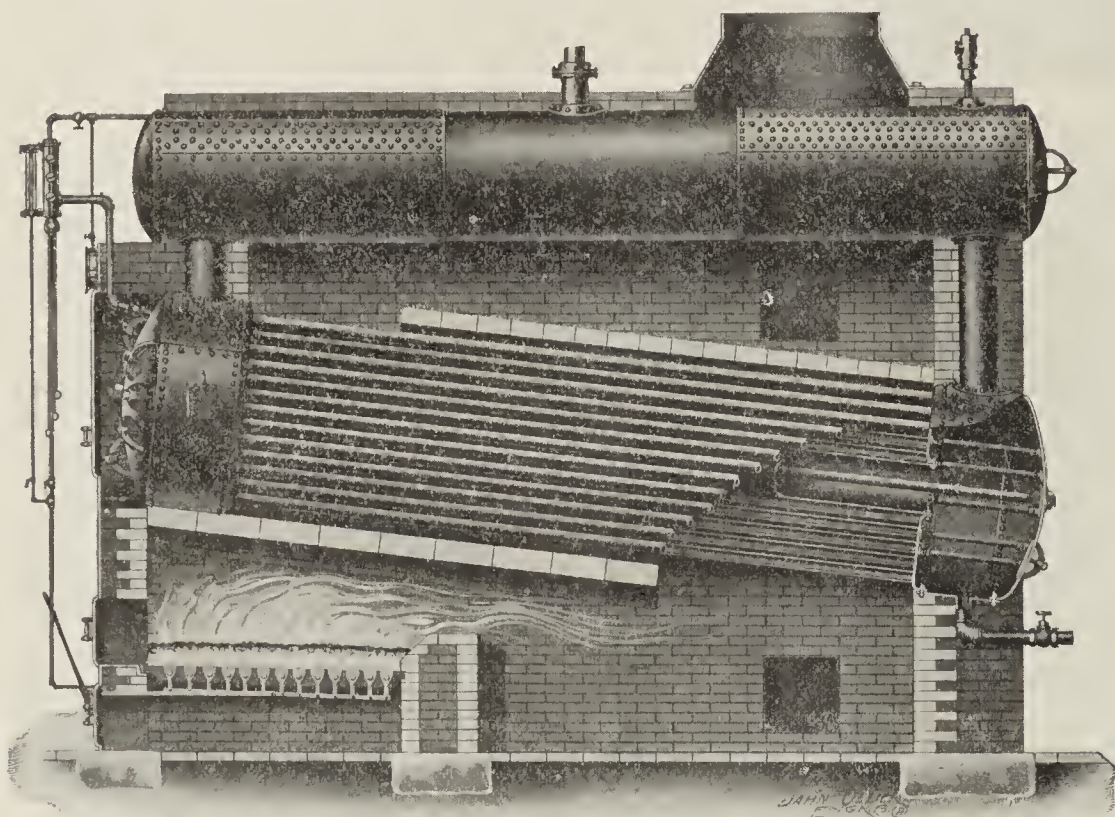
"The channel will be twelve feet deep, affording enough water for lighters and barges. The water from the channel will help materially to clean out the north branch."

WATER TUBE VS. TUBULAR BOILERS

It is not surprising that horizontal return tubular boilers were used before more economical and desirable boilers of the water tube type were invented and perfected, and while all very large steam plants are now being equipped with water tube boilers, yet it is a fact that a large percentage of small plants are being equipped with the wasteful tubular boiler, and it is surprising that this is so. Many argue that for small plants where time is limited for washing-out, the horizontal tubular boilers are more desirable as it requires too much time to remove and replace a large number of the hand-hole plates, and this position is doubtless well taken when only the hand-hole type of water tube boilers is considered. It is, however, a fact that it is absolutely impossible to thoroughly wash all the heating surface of horizontal tubular boilers; at best only the top of tubes, bottom of tubes and bottom of the shell can be washed, but with water tube boilers of any type all the heating surface can

longer than ten years. Water tube boilers made for 150 to 200 lbs. working pressure may be used many years longer without much reduction in pressure, since the renewal of tubes when necessary gives a comparatively new boiler. Within fifteen years 150 to 200 lbs. pressure may be needed and if so the required pressure will be allowed on water tube boilers.

The most potent reason however, why water tube boilers should be used in preference, lies in the fact that with some types it is possible to install a furnace in which good combustion can be attained, and it may be stated without fear of successful contradiction that every user of horizontal tubular boilers using bituminous coal without the use of a smokeless furnace, has wasted from 15 to 25% of the fuel cost. With the use of coal carrying a high percentage of volatile matter in order to attain good combustion and an economical result, it is necessary for the gases from the volatile matter to become thoroughly mixed with the oxygen from the inflow-



be thoroughly washed, which will, of course, keep it in a generally better condition for the absorption of heat. The more rapid accumulation of scale and mud on the tube surface and tube sheets of tubular boilers (which cannot be washed off) becomes much thicker in a given time with like conditions (with its consequent evil results) than does such material on the tubes of water tube boilers. It is possible to cheaply remove all such material from the tubes of water tube boilers, leaving the heating surface in the same condition as when new so far as the absorption of heat is concerned; on the contrary with horizontal tubular boilers, only a small portion of such material can be removed by the use of a hammer operating within the tubes. The average difference in economy in favor of water tube boilers due to this fact alone makes it inconceivable how any one will use horizontal tubular boilers.

One hundred and twenty-five lbs. working pressure with horizontal tubular boilers, owing to the tendency to damage the fire sheet, is seldom allowed by insurance companies

ing air, within a temperature sufficiently high for ignition, the result being a high percentage of Carbon Dioxide (CO_2) in the products of combustion, which means a high efficiency if the condition of, and arrangement of the heating surface are such that the maximum absorption of heat can result.

Experience has proven the impracticability of installing fire brick surfaces (smokeless furnaces) under horizontal tubular boilers; if such surface is made sufficiently long to produce a smokeless condition, a large area of the heating surface is lost, and the exceedingly high temperature invariably causes frequent repairs to rear tube sheet.

The execution of the laws for the suppression of smoke in many of the large cities has demonstrated the wisdom of steam users adopting a water tube boiler having a desirable furnace that under fair conditions will produce a smokeless condition, and to the more remote from large cities and the higher the price of fuel the greater the wisdom of so doing.

What we have said of the general advantages of water tube boilers, in a large measure may be said when comparing water tube boilers of different types. Under like conditions scale formation is more marked in some types than others depending on the rapidity of circulation. The hand-hole type is not as desirable as the man-hole type for quick and thorough washing. In comparatively small plants where only a short time is available for washing out, the hand-hole type if used, cannot be thoroughly washed within the allotted time; disappointment in this regard has doubtless caused the impression with some that water tube boilers are not desirable for small plants. It is obvious that if the man-hole type is more desirable for small plants for the above reason, they must be better for large plants since the circulation is unquestionably superior, besides admitting a long durable arched Dutch oven furnace under the boiler and attaining more economical results.

Your attention is called to the accompanying figures showing the Goss water tube boiler.

It will be seen at a glance by those familiar with water tube boilers that it has no new or untried features; it is in fact a combination of the best features of several of the best water tube boilers that have been giving satisfaction for many years. There is nothing new about the furnace except that we have proven that a long self-supported fire brick fire arch is durable and a furnace temperature can be maintained for the length of time necessary for the gases from the volatile matter to become thoroughly mixed with the oxygen from the inflowing air, and that a better combustion is attained and maintained than with any other known furnace.

In the attempt to gain good combustion some makers of water tube boilers place fire tile on the lower tubes which not only diminishes the heating surface, but prevents a free circulation of gases through all the tube surface; on the contrary the area between our fire arch top and tubes admits of a free circulation around all the tube surface.

In order to thoroughly wash the tubes of the Goss water tube boiler it is necessary only to remove two and at most three man-hole plates. Owing to this convenience there is of course no comparison to be made with water tube boilers of the hand-hole type, but we do wish to undertake to show that our boiler can be thoroughly washed in less time than is required to wash horizontal tubular boilers. We do not wish it understood that we advocate quick washing of boilers soon after they have been cut-out; it is, however, often necessary and we are simply undertaking to show that under such conditions the Goss water tube boiler is more quickly and thoroughly washed than is a horizontal tubular boiler. The first operation to wash a horizontal tubular is to remove the top or rear man-hole plate; after washing the top of tubes as well as possible, the hose is changed to the front and the bottom of tubes and shell are washed, and during the operation not over 50% of the tube surface has been washed. Therefore the Goss Water Tube Boiler is more desirable from every view point than the horizontal tubular, and for reasons before mentioned, it is superior to any other boiler of the water tube type.

The following is a recent test showing the difference between the Goss Water Tube Boiler and furnace and a tubular boiler.

Goss Water Tube Boiler Co.

Fisher Bldg., Chicago, Ill.

We hand you herewith summary of principal results obtained on two boiler tests run in the works of Joseph Junk Brewing Co., this city.

The objects of the tests were to determine the costs of evaporation and the relative operation of the two boilers. Both tests were made under the same conditions and plant was operated by the same firemen in both cases.

SUMMARY OF PRINCIPAL RESULTS

		Tubular Boiler	Goss Boiler
1	Duration	hrs. 10	10
2	Steam Pressure	lbs. 79.5	97.1
3	Temp. Feed Water	°F. 162.	183.
4	Kind of Coal	George's Creek Mine Run	Clinton Duff.
5	Weight of coal as fired	lbs. 5276.	11000.
6	Weight of water fed	lbs. 39177.9	73608.
7	Equiv. water from and at 212°F. lbs.	40767.	78709.
8	Horse power developed	H. P. 118.2	228.
9	Percentage of Rated H. P.	% 103.0	58.0
10	Actual evaporation	lbs. 7.426	6.691
11	Equivalent evaporation	lbs. 7.727	7.155
12	Efficiency of boiler	% 54.31	63.04
13	Cost of fuel per ton	\$ 3.75	1.60
14	Cost of fuel to evaporate 1000 lbs. of water from and at 212°F. cts.	24.27	11.18
15	Per cent saving	%	53.9

Smoke produced by Goss Boiler ranged from 10 to 20 per cent on firing for about 30 seconds, combustion being smokeless the remainder of the time. This was a condition somewhat better than obtained on the tubular boiler with high grade coal.

COLLINS & STEVENS.

August 26th, 1907.

HAARER ANXIOUS TO FIND OUT WHY MANUFACTURERS DELAY SHIPMENTS

Fearing a brick famine and a tie-up of the city's work at Detroit, Mich., of paving this fall, Commissioner Haarer has gone to the headquarters of the five companies in Ohio under contract to supply the city with brick to learn the reasons for delay in shipments. This is the explanation given in the department of public works for Haarer's absence on a trip into Ohio; another report from a source close to the department is that the brick manufacturers have been shipping in too many poor brick to satisfy Haarer and that he has gone to call them to account.

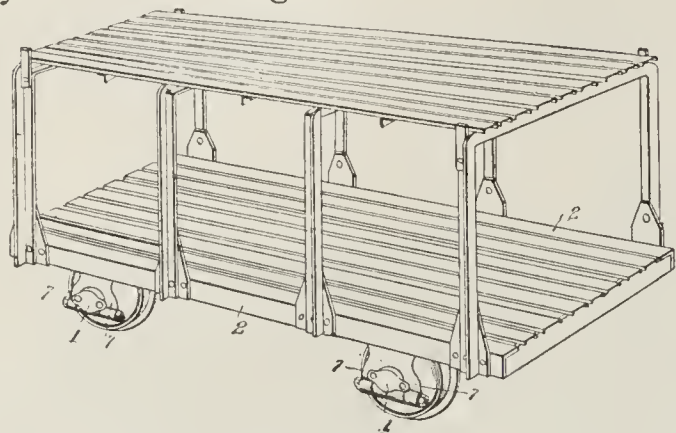
Of course, the city doesn't pay for the bad brick, but they serve to reduce the number of good ones, causing the present shortage. The department has only enough brick to keep it going for about three more weeks, and this at one of the busiest times in years, when very extensive improvements are under way. The Malvern Clay Co., the Collinwood Shale Brick Co., Metropolitan Paving Brick Co., Masstillon Stone & Fire Brick Co., and F. B. Stevens Co., all Ohio concerns that supply the brick, have explained delays in shipments to the department by saying that it is extremely difficult for them just now to get cars.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

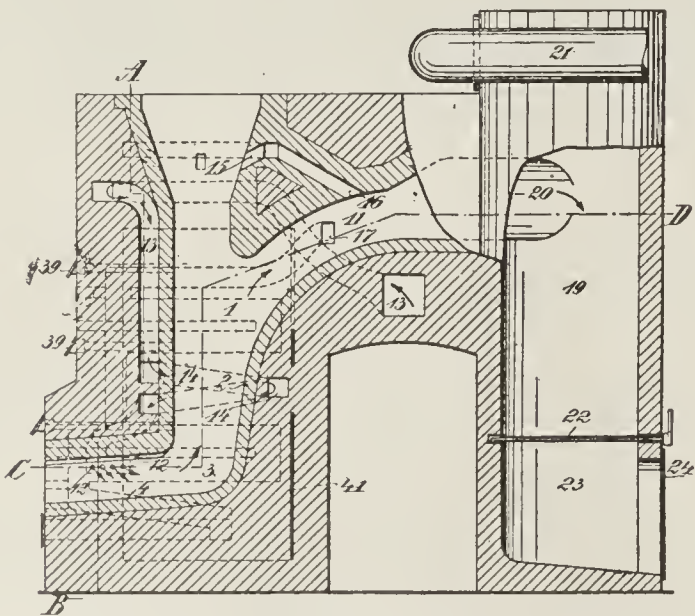
857,270. Drying-Car for Clay Products. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a Corporation. Filed April 10, 1907. Serial No. 367,452.

Claim—In a vehicle, the combination with the body thereof, the axle and bearing wheels thereon, of a journal-box in which each end of the axle is turnable, a vertically-forked hanger fixed to the vehicle body, and means for pivotally-mounting the under side of the journal-box in the lower part of the fork of said hanger to enable the box to automatically respond to irregularities in the road-bed and to adjust itself relatively to the fixed hanger.



The combination of a fixedly-secured hanger having a bifurcated lower portion forming two arms, said arms having holes therein axially in line, a bolt fitting said holes and extending transversely across the opening therebetween, a journal-box mounted in the opening of the hanger and having a hub-portion on its under side, said hub-portion being contained between the arms formed by the bifurcation of the hanger and being pivotally mounted on said bolt, whereby it may oscillate transverse thereof.

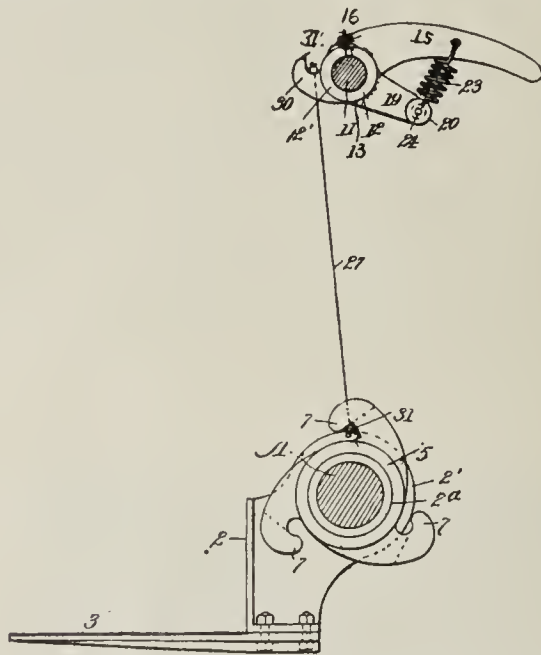
857,429. Filn. Gustav Wiegmann and Clemens Dorr, Berlin, Germany. Filed March 24, 1902. Serial No. 99,696.



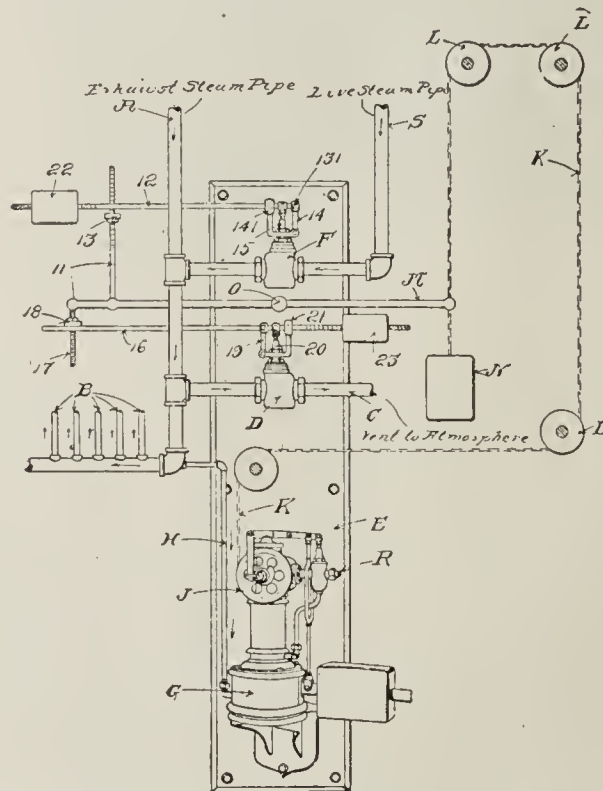
Claim—The combination in a kiln, of a vertical shaft having a feed portion and a combustion portion, an approximately horizontal shaft communicating with the lower end of the combustion portion of said vertical shaft, blast nozzles opening into both sides of the approximately horizontal shaft, a flue leading off from that point where the feed portion of the vertical shaft meets with the combustion portion, and a channel connected with the feed portion of the vertical shaft at a point above the connection of said feed portion with the flue, the said channel leading to the flue, substantially as set forth.

857,603. Wire Attachment for Brick and Tile Cutting Machines. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a Corporation. Filed March 14, 1907. Serial No. 362,345.

Claim—In a wire attachment of the character described, the combination with a wire having an enlargement, the end of the wire being extended beyond said enlargement and being looped across itself to form a retaining means for the enlargement, of means for holding one end of the wire, and a claw-shaped member for detachably engaging the enlargement on the opposite end of said wire.



In a wire attachment of the character described, the combination with a wire having enlargements at opposite ends, the ends of the wire being extended beyond the enlargements and thence looped backwardly across the wire to form a retaining means for the enlargements, means for engaging and holding one of said enlargements, a pivotally-mounted claw-shaped member for engaging and holding the opposite enlargements, and a spring acting upon said member to cause it to hold the wire under tension.



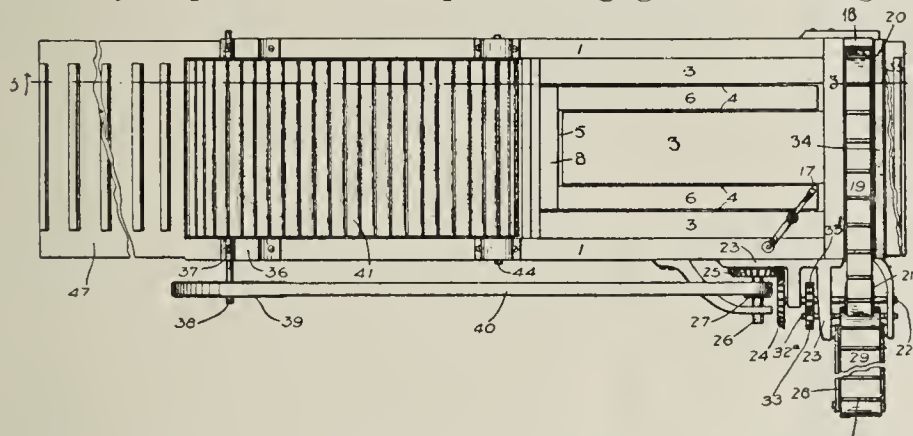
858,089. Apparatus for Maintaining Uniform Pressure in Driers. William B. Mason, Boston, Mass., assignor to The Mason Regulator Company, Saco, Me., a Corporation of Maine. Filed May 17, 1906. Serial No. 317,329.

Claim—Controlling mechanism for maintaining a predetermined pressure in a chamber supplied from two sources, the main source of which is variable, and the auxiliary source of which is of relatively high pressure, which comprises a vent valve and a high pressure valve, a main operating lever, whose movement in one direction acts to close the high

pressure valve and open the vent valve and whose movement in the other direction acts to close the vent valve and open the high pressure supply valve, and a pressure weighing device responsive to changes in pressure in the chamber and operating to move the said lever.

857,936. Combined Dumping Platform and Elevator. Edward W. Harmon, Kansas, Ill., assignor of one-third to Wm. C. Pinnell, Kansas, Ill. Filed July 2, 1906. Serial No. 324,486.

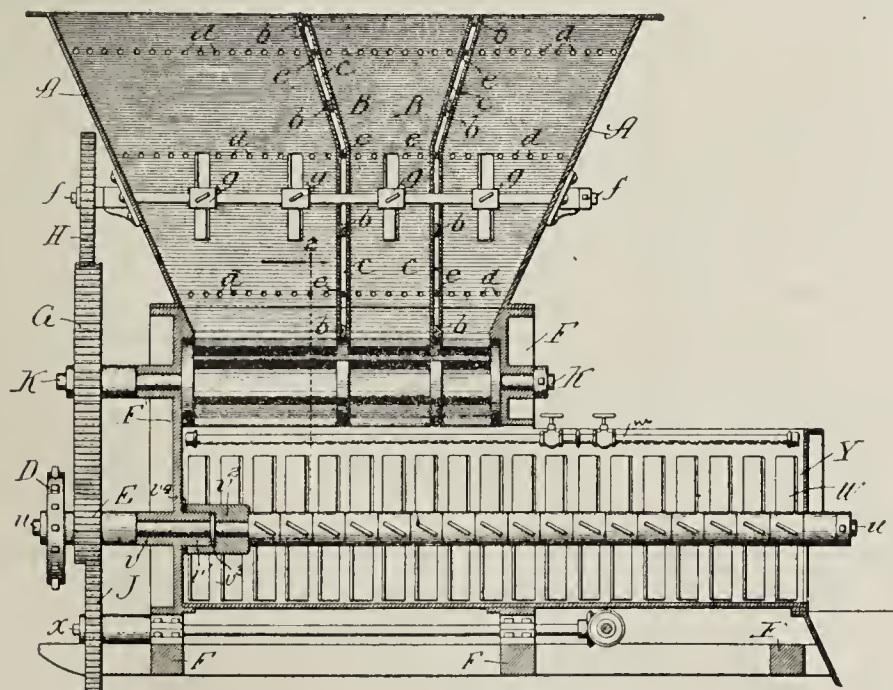
Claim—A combined dumping platform and elevator comprising a main frame, a platform arranged in one end of said frame, parallel, longitudinally-disposed dumping bars arranged in said platform, a crank shaft connected to one end of said dumping bars, a worm gear on said crank shaft, a vertically-disposed worm adapted to engage said worm gear,



a crank handle on the shaft of said worm, whereby the latter may be turned, thereby operating said gears and crank shaft to tilt said dumping bars, an endless conveyer arranged across the forward end of said platform, an elevator connecting with said conveyer, driving gears connected to said conveyer and elevator, a tread power arranged in the rear end of said frame, a drive pulley operated by said tread power, and a belt connecting said drive pulley to the operating gears of said conveyer and elevator, substantially as described.

857,742. Measuring and Mixing Machine. Andrew Lanquist, Chicago, Ill. Filed Oct. 12, 1905. Serial No. 282,516.

Claim—In a measuring and mixing machine, the combination of a hopper having a plurality of adjustable compartments and partitions each adapted to contain and feed a constituent material onto a measuring roll, a measuring roll having longitudinal divisional walls mounted eccentrically to the axis thereof and forming pockets, movable transverse par-

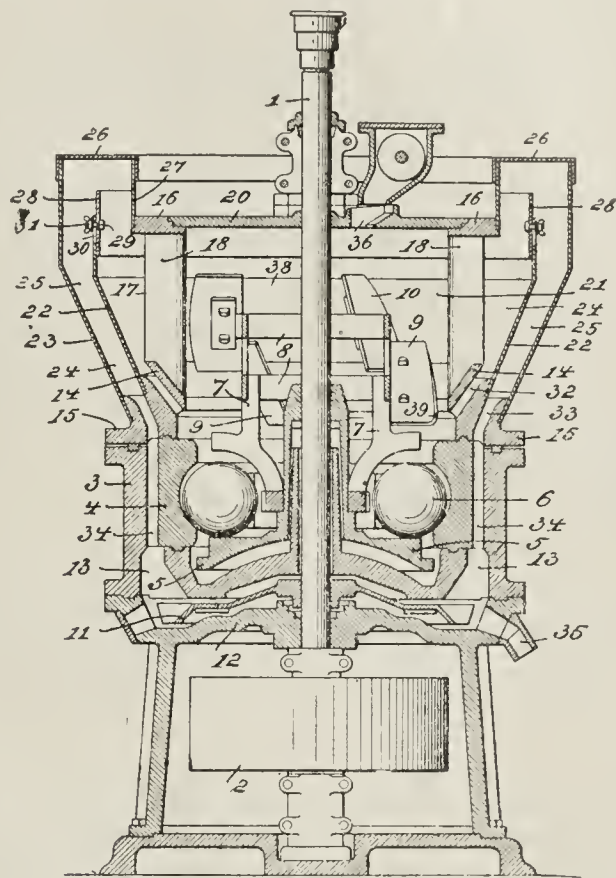


titions in said pockets, means for adjusting and locking them therein, means for alining the partitions of the hopper with said transverse partitions, mixing apparatus below said roll and a cylindrical casing provided with a top opening into said hopper compartments and a bottom opening into said

mixing apparatus, said casing being adapted to fit closely about the outer edges and ends of said longitudinal divisional walls.

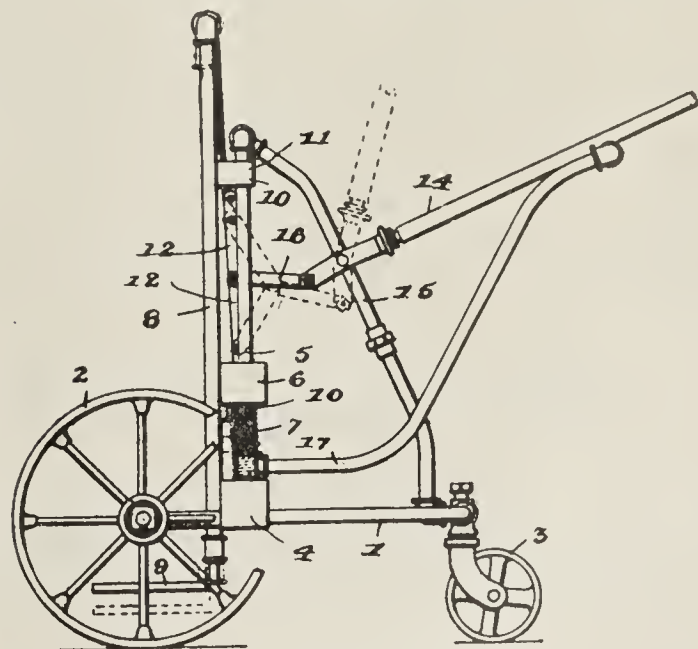
857,932. Pulverizing or Grinding Mill. James W. Fuller, Jr., Catasauqua, Pa. Filed July 5, 1906. Serial No. 324,717.

Claim—In a pulverizing or grinding mill, outer and inner casings, rotatable blades or wings arranged centrally in the mill within a casing arranged inside of said inner casing and forming by the operation of said blades or wings the suction chamber of the mill and said outer and inner casings forming



separating and collecting chambers, said inner casing provided with a ring adjustably supported therefrom and adapted to increase or decrease the outflow of material from said separating into said collecting chamber, substantially as and for the purposes described.

857,859. Brick-Truck. George Barney, Leesville, La. Filed June 4, 1906. Serial No. 320,103.



Claim—A truck such as described consisting of a horizontally disposed U-shaped frame member, wheels journaled at the ends of said member, a caster pivotally attached at the intermediate portion of said member, a vertically extending frame member, a brace connecting the upper end of said vertical member with the rear end of said horizontal member, a handle member suitably attached to the frame member, and a vertically adjustable frame guided by the vertically extending frame member, and means for moving said adjustable frame.

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No. 4

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Good advertising of good goods in a good paper going to
good people in the right line always pays—this combination
can not fail. Try the Clay Record and see for yourself.

CONCRETE TIES DISCARDED AS A FAILURE

After three years trial on the Lake Shore & Michigan
Southern Ry., concrete ties have been found satisfactory for
slow service, but not for a fast track.

The Illinois Central does not regard these ties as of much
value, over 50 per cent used by this road having been found
to crack and generally disintegrate. Difficulty has also been
encountered in finding a satisfactory method to fasten them
to the rails, and it has been next to impossible to prevent the
rails from creeping. It seems to be the consensus of opin-
ion among expert engineers that the concrete tie is a fail-
ure.

WANTS COMMISSION RATES APPLIED TO
BRICK SHIPMENTS

Washington, August 27.—The Coffeyville Vitrified Brick
and Tile Company, Coffeyville, Kan., complains to the In-
terstate Commerce Commission against the rates exacted of
it by the Frisco and Rock Island roads on car load ship-
ments between Cherryvale and other Kansas points and
Duncan, I. T.

The former road carries shipments from Cherryvale to
Chickasha, I. T., and the Rock Island from that point to
Duncan, charging a rate of 12 cents per hundred pounds.
This is the through rate. There is a commission rate in exist-
ence and effect between Cherryvale and Duncan, the com-
plainant states, of 11½ cents per 100 and it insists that this
rate should be applied and the extra one-half cent should
not be charged.

DES MOINES BUILDERS MAY MAKE BRICK

A number of the larger construction and building com-
panies of Des Moines, Ia., have combined in building a large
plant to manufacture brick for their own use, it has been
stated authoritatively.

Nelson Royal, secretary of the Cook Construction com-
pany, stated that his company had taken no definite steps in
the matter but it is known that O. P. Herrick and others
have secured an option on ten acres of choice shale just out-
side the city limits.

Mr. Royal stated that the increased price of brick had
placed the construction companies in a position where there
was little money in their contracts. The bids for the pav-
ing which the city council turned down some weeks ago for
the reason that they were too high are said to have been
at such a figure that the companies could barely break even.
"It would cost at least \$200,000 to properly equip a good
brick plant," said Mr. Royal, "and several companies would
have to combine to successfully carry out the project."

There is an abundance of the best clay for brick making
purposes to be had here and it is claimed there is no reason
for the present high price of brick.

W. F. Cook, president of the Cook Construction com-
pany, is an experienced brick man, having been identified
with the Iowa Brick company. He holds several patents for
machinery used in the industry, and no doubt would be the
man placed at the practical head of the business should the
plans mature.

OBITUARY

Archibald Shaw, age 43 years, died at his home, 44 Marshall Ave., Allegheny, Pa. He was a trusted employee of the Pittsburgh Clay Pottery Co.

Emanuel Frey, one of York, Pa., wealthy citizens, a retired coal merchant and brick manufacturer died suddenly at his home in York. He was 71 years old and leaves five children.

Jacob Bleile, Sr., age 77 years, one of Columbus, Ohio, best known German-American citizens, died at his home, 327 So. 4th St. He was formerly in the brick manufacturing business.

Godfrey Hagil, 69 years of age, a retired brick maker, died at his home, 1327 Tioga St., Philadelphia, Pa. Blood poisoning resulting from the running of a carpet tack in his foot was the cause of his death.

FIRE! FIRE! FIRE!

The brick works of the Pine Bluff (Ark.) Brick Co. were visited a \$3,000 fire. The works were outside of the city limits and had no fire protection.

The brick making plant of Phillips & Bartlett at Deadwood, So. Dak., was completely destroyed by fire causing a loss of \$20,000 with only \$1,500 insurance. Fire started by workmen leaving a smoldering blaze which set fire to the plant.

The tile factory at Stockport, Iowa, owned and operated by Wheatley & Harlan caught fire in the boiler room and was burned to the ground. The plant is valued at \$8,000 and insured for \$3,500; steps are being taken to rebuild.

Fire of incendiary origin caused \$50,000 damage to the RockportRockland Lime Co. plant, at Rockport, Maine. Three weeks ago the lime company suffered a similar loss by fire of \$75,000.

The Sulphur Springs (Ark.) Lime Works located 22 miles north of Siloam Springs, Ark., were destroyed by fire causing a \$3,000 loss. A new and larger plant will be erected at once.

COMMISSIONER DOWNEY WARNS BUILDERS AND OTHERS THAT CONCRETE STRUCTURES WILL BE INSPECTED

Building Commissioner Downey of Chicago sent out a letter to all the architects, engineers and contractors in the city warning them that the building department would insist on a thorough test of the new concrete buildings.

"There have been about thirty deaths during the last year from the collapsing of concrete structures," said the commission. "They are all right when they are well made. But if the cement is mixed improperly, or the forms aren't well designed, or are removed before the concrete has had time to set, the result is a weak and dangerous structure.

"Hereafter every concrete floor will have to sustain without visible strain twice the load which it is expected to carry. The expense of making these tests will be charged up to the owner."

ACCIDENTS, DAMAGES AND LOSSES

A motion for the appointment of the third receiver to act with the other two has been made in behalf of the creditors.

A suit in attachment has been filed against the McNeil Pressed Brick Co., St. Louis, Mo. The plant is at Newbern, Ill.

The widow of Christian E. Brockman, the late wealthy pottery owner at Cincinnati, O., has filed a suit to contest his will.

Two negroe convicts of the Bibb Brick Co., Macon, Ga., escaped and are still at large, although every effort is being made to catch them.

Because Bert Hoffman an employee of the James Maine & Son Brick Works at Des Moines, Ia., was discharged, 16 of his fellow workmen went on a strike.

K. B. Grahm, president of the Louisville (Ky.) Fire Brick Co., suffered internal injuries by being struck by a L. & N. train and is now in the Norton Infirmary.

Mrs. John Boland, wife of the proprietor of the Hotel of the National Brick Co., at Maynard, Ind., was burned to death in mistaking gasoline for oil in starting a fire.

Charles Porter an employee of the Enameled Brick Works at Mt. Savage, Md., in stepping off a platform fell between a pulley and a belt and was drawn through and instantly killed.

Frank Richards of Philadelphia, Pa., a bondholder of the United States Brick Co., Reeding, Pa., filed a bill in equity to declare the company insolvent and appoint a receiver to take charge of the assets.

L. C. Parker, an employee of the Denton (Texas) Pressed Brick Co., stepped into a hole full of boiling water from the boiler and his flesh was cooked and burned from the knee down.

The stockholders of the Barberton (O.) Pottery Co. have been sued by M. O'Neil, O. C. Barber and H. B. Camp, to cover a balance alleged to be due on a loan, some of the stockholders being paid.

David Mattern, a brick manufacturer of Allentown, Pa., is in a precarious condition with injuries sustained by being thrown from a carriage. An automobile frightened his horses and turned it into the ditch.

William Bowman, an engineer of the Diamond Stone Brick Co., Wilmington, Del., was a victim of a dastardly attack while at his work. He was beaten so he was unconscious and is now in the hands of a doctor.

ILLINOIS BRICK COMPANY'S EARNINGS SATISFACTORY

A director of the Illinois Brick company says that earnings are satisfactory although the dull season is now at hand. Prices for brick are being firmly maintained at \$7 per 1,000, and there is no ground for complaint on that score. The independent manufacturers are holding their market firm, and there are no signs of demoralization anywhere along the line. It is stated that the Illinois company's earnings would fully justify the restoration of 6 per cent dividends at this time, but it is deemed better policy to accumulate a comfortable surplus before attempting to return to the old rate again.

A PAVING BRICK PLANT FOR U. S. PRISON ASSURED

The federal prison, Leavenworth, Kan., is to be equipped with a plant for the manufacture of vitrified brick. The prison officials have had the project in view for nearly a year. Specifications were issued by Eames & Young, architects of the prison, several months ago and bids received. The department of justice decided that the plans should be changed and after new specifications were issued revised bids were made. Certain firms claimed that they had not been treated fairly in not being able to compete for the contract for the plant under revised plan. The adjustment of this claim occupied several more months and it was not until July 29 that final action was taken in the matter.

The contract has been awarded to the American Clay Machinery Co., of Bucyrus, Ohio. The plant will cost \$13,653.44. Of this sum \$7,828.44 will be expended for the machinery proper and the remainder, \$5,825, for waste heat dryers. The construction of the plant will begin within a month. It will have a capacity of from 40,000 to 60,000 brick per day, and will be capable of manufacturing either plain building or vitrified paving brick. The present brick plant will produce only 25,000 building brick per day.

The new brick plant is to be located north of the east gate outside of the present prison enclosure. It will be surrounded by a wall similar to that about the prison proper, enclosing a space 400 by 300 feet, joining the prison yard. The railway track will be extended through the wall to connect with the brick plant. In a few days a stockade will be built around the site and work commenced on the wall.

The operation of the new plant will require fifty men. A gang of convicts is already at work in the shale pits on the reservation west of the prison. The quarries will be ready to produce their maximum output by the time that the brick plant is completed.

The product will be used first to pave all approaches to the prison and the roadway around the walls. Metropolitan avenue will be paved from Seventh to Twentieth street. Later it is expected that the avenues of Fort Leavenworth will be paved with the prison brick.

WOMAN BURNS TO DEATH BY GASOLINE EXPLOSION

The negligence of a boy employed in a grocery store to label a can "Gasoline" caused the death of Mrs. John Boland, wife of the proprietor of the National Brick Company hotel at Maynard, a town five miles north of Hammond, Ind., and an explosion which partially wrecked the hotel. The explosion was caused by the attempt of Mrs. Boland to light a kitchen stove with what she supposed to be a can of kerosene. The can instead contained gasoline. The burning fluid set fire to her clothing and spread about the room. The woman's body was burned almost to a crisp before the arrival of her husband. Her burning body was wrapped in blankets and she was carried to a yard, where the flames were extinguished. Mrs. Boland was removed to St. Margaret's Hospital, Hammond, where she died an hour later.

KILLING OF NEGRO JONES CLAIMED TO HAVE BEEN JUSTIFIED

Rock Hill, August 24.—The inquest of the coroner's jury over the body of "Tit" Jones was held to-day. All the evidence was that while Mr. Frazier Anderson, foreman at Ashe's brick yard, was paying off the the hands Saturday afternoon, considerable confusion arose, and Anderson ordered a boy to clear the room and close the door, saying that he would call the hands singly for settlement. "Tit" Jones objected to this, cursed Anderson and attempted to go in the door. Failing to do that he started towards another door with an open knife in his right hand. Anderson appeared in the door and told the others to take Jones away. The negro continued to advance, and when in four or five feet, he was shot dead. The body fell towards Anderson.

The jury's verdict was in accordance with the above, with the added statement that in its estimation the killing was justifiable. Anderson's attorneys will apply for bail at once.

EXPERIMENTS WITH BY-PRODUCT OF SMELTER ARE PROMISING

Aanaconda, Mont., Aug. 19.—The manufacture of brick and building blocks from the tailings of the smelters is under experiment at the Washoe smelters. If successful, a plant that will turn out 20,000 bricks a day will be installed.

The problem of what to do with these by-products has been a serious one for years. The quantity steadily increases, and the dump occupies many acres of ground. The tailings have been used on the streets and roads, but did not give much satisfaction. They can be used as sand in plasterings, but very little can be consumed in that manner.

Experiments so far show that this waste will make an excellent quality of brick, that is styled the sand lime brick and sand lime building blocks. No burning is required in their manufacture. They are mixed and pressed, steamed for ten hours and in twenty-four hours are ready for use.

BRICK TO BE MADE OF BORAX TAILINGS

San Bernardino, Cal., Aug. 16.—Brick manufactured from borax tailings, minus the boric acid component, will be placed on the market September 15 by the desert borax concern at Daggert, according to advices received here. These bricks, it is stated, will be sold at such a price that they will be used in preference to lumber, which at this time commands a price more than double the probable cost of the borax by-product bricks.

The ore is first ground in 60-mesh, then treated to extract the boric acid; next, the residue is compressed. The brick will be of two kinds, common red and Mexican adobe, and either will prove cooler in summer and warmer in winter than the wood so generally used in construction work in recent years.

The only reason that lumber has been so generally used on the torrid Mojave desert heretofore is that the cost of brick has been prohibitive, all material of this kind having first to be shipped in over long distances.

TERRA COTTA STRIKE STILL ON BUT BACK BROKEN

South Amboy, N. J., Aug. 29.—At the office of the South Amboy Terra Cotta Company this afternoon it was stated that there are no changes in the strike condition; that the works are kept going with a reduced force and that the strikers will not be able to hold out much longer. The concern has detective guarding the works and means to prosecute any of the strikers who are found molesting the men willing to work. The officials consider that they broke the back-bone of the strike when they secured a Chancery injunction restraining the strikers from interfering with the workmen.

The only dispute in this strike is over the employment of a foreman named Macan. As soon as he was engaged the workmen quit and declared that they would not return unless he was discharged. The company declined to do this and the men have remained out. They claim that Macan in the past has ill-treated men under him, but the company is willing to guarantee that the men will be treated properly and if they are not that the new foreman will be discharged.

TRACTION DITCHER GOOD FOR BRICK INDUSTRY

A new side wheel model traction ditching machine, the patent on which has been just secured by its manufacturers, the Buckeye Traction Ditcher company, is receiving a thorough test near Toledo, Ohio, it being worked in a heavy bed of clay. From reports of the test made, such an advancement has been made by the taking of clay from the ground by a traction machine that the entire industry will likely be revolutionized, at least such is the opinion of those who were instrumental in the manufacture of the first model.

The new machine is designed to dig a trench any reasonable size, and instead of removing the dirt from the trench into piles along the side, it is conveyed to cars automatically run beside the machine.

It is planned by the manufacturers to run the machine into a clay bed by a trench method, conveying the same to the terminus of the track, which is an important feature of the new machine, and thus entirely obviating the necessity of using the scraping process in taking out raw material for brick or tile manufactory.

The test at Toledo is reported to be highly successful in every way, and brick manufacturers in that vicinity are said to fall in with the idea, whereby their business may be run much more cheaply, a great deal less labor being necessitated.

ANOTHER DRAIN TILE CO. FOR MASON CITY

Articles of incorporation were filed here for the Mason City (Iowa) Drain Tile Co., which is organized by the owners of the Mason City Brick and Tile Co. which operated three plants. The company is capitalized at \$100,000, and will erect another large plant. The company own several acres adjoining the city limits said to be first-class city land. The officers of the new company are: President, O. T. Denison; vice-president, F. A. Stephenson; secretary, F. E. Keeler; treasurer, L. W. Denison.

OHIO RIVER BRICK MANUFACTURES ORGANIZE

Brick manufactures of Western Pennsylvania, Ohio and Virginia have organized into a body to be known as the Ohio River Brick Manufacturers' association. The following officers have been chosen for the ensuing year: President, Archie Stewart, Beaver, Pa.; secretary, Samuel S. MacMillen, Beaver Falls, Pa.; treasurer, R. Hice, Beaver, Pa., chairman of the committee on railroad legislation, T. D. Brown.

ESCAPED CONVICT SHOT TO DEATH BY GUARD

Boyce Givens, the negro convict who was sent up for murder from Jefferson county was shot and killed near Avondale, Ga., by one of the white guards employed at the Cherokee Brick company plant near Macon Ga.

Boyce made his escape from the brick works where he had been at work and fled toward Avondale.

There he met up with a negro and asked to be secreted somewhere in a safe place. Givens was led to some thick woods and was told that the supposedly friendly negro would return and pilot him across the river.

The would-be friend, however, wanted the \$50 reward and made his whereabouts known to the guard. The two surprised Givens and when the latter would not stop running the guard fired, hitting him in the leg with buckshot. When the guard was about to reach the negro Givens started to run again and plunged into a creek. As he reached the opposite bank the guard shot again, shooting him dead.

BIG BODY OF FIRE CLAY NEAR NILES

The discovery of large deposits of clay suitable for the manufacture of building and fire brick near Niles, Cal., has awakened considerable interest in financial and manufacturing circles in this county. The extent of the deposits was discovered while making excavations for the new line of the Western Pacific in Niles Canyon, and already a company has been formed to manufacture the product.

The California Pressed Brick Company, as the new concern is called, has bought up large holdings, and is already erecting building and installing machinery. It is intended to enter the field of competition for the coast trade and the chief shipping points are to be Niles and Oakland. The new industry means much for the place and for the county. Jackson Dennis, president of the Niles State Bank and of the Sutter Creek Bank, is president of the company. J. J. Rutledge, a mining engineer of Nevada, is vice-president. The directors are F. A. Allardt, assistant cashier of the Oakland Bank of Savings, Clarence Crowell of Oakland and Paul Furst of San Jose. John S. Smith is ceramic engineer.

BONDHOLDERS SEEK SATISFACTION FOR BRICK CO'S DEFAULT OF INTEREST

Reading, Pa., Aug. 30.—An unexpected move following the recent default of the United States Brick company of its interest on bonds, was made to-day, when Frank Richards of Philadelphia, a bondholder, filed a bill in equity to declare the company insolvent and appoint a receiver to take charge of the assets. On December 1, 1904, the defendant company authorized an issue of bonds not exceeding \$1,500,000, payable Jan. 1, 2005.

SAND OR LIME BRICK OR BLOCK NEWS

Robert Redick has a cement brick factory at Clinton, Mich.

C. W. Boyle, Grand Rapids, Mich., has perfected a machine which will make cement brick.

The Wilson Cement Brick & Block Co., Wilkesbarre, Pa., has been incorporated with \$100,000 capital stock.

The Brenham (Texas) Brick Co. is preparing to make a delivery of a half million brick to Galveston contractors.

The Saginaw (Mich.) Sandstone Brick Co. reports plenty of orders on hand and large shipments to all points of lower Michigan.

The Indianapolis (Ind.) Composite Brick Co., has filed a trust deed of \$25,000 and will bond the company to make improvements.

Nils Mickelson of Austin, Minn., is making large sewer-pipe for the city of Austin, the credit for the enterprise belongs to Alderman Zender.

The Denbigh (N. Dak.) Brick Co., are meeting with great success with their new sand-lime brick plant. 20,000 brick are being turned out daily.

The Ft. Wayne (Ind.) Pressed Brick Co.'s plant was badly damaged by the flywheel of the engine bursting and completely demolishing the engine and engine room.

The Dallas (Texas) Hydraulic Brick & Stone Co., has lately been organized and will build a plant for making brick and stone. The machinery will be purchased by W. S. Conner.

Comanche, Texas, is to have a cement brick works; a Mr. Meade of Louisiana has already obtained options on land belonging to J. N. Farmer for the purpose of building the plant.

In the action of Fredrick Ohlemacher against the Watertown (N. Y.) Sand Brick Co. the defendants have made an application for an appeal. A judgment was obtained for \$1,200.

The Sand Lime Brick Plant Co., New York, has been incorporated with \$50,000 capital stock by Edward F. White, 20 E. 42nd St., W. B. Vance, 198 Broadway and F. A. Camp, 20 E. 42nd St.

The Canadian Polished Stone Brick & Tile Co., Montreal, Quebec, Canada, has secured the rights to manufacture the Stehm Brick Machine in Canada. They will erect a plant in Montreal.

The Woodman Sand Stone Co., Ocala, Fla., will establish a plant for the manufacture of artificial stone and brick paving material. J. R. Moorhead is president and David S. Woodrow, secretary.

The Atlas Brick Co., New York City, N. Y., has been incorporated with \$100,000 capital stock. Directors are James J. Martin, Brooklyn; Wm. H. Cutler, Freeport, and Franklin Henshaw, New York City.

The Shields-Chamberlain Co., Hackettstown, N. J., has been incorporated with \$10,000 to make brick and artificial stone. Incorporators are Thos. Shields and Emma E. Shields of Hackettstown and Pierson M. Chamberlain, Netcong, N. J.

MISCELLANEOUS ITEMS

The Mateno (Ills.) Brick Co., is now installing a new \$8,000 steam shovel in its brick plant.

Neff & Owen are putting in at Osyka, Miss., a brick making plant to make 40,000 brick daily.

The Industrial Brick Works, Boonville, Ind., are erecting new kilns preparatory to the manufacture of tiling.

E. L. Correll, El Campo, Texas, will develop the clay deposit recently found there and install a modern brick plant.

A shortage of workmen at Palouse, Wash., has caused the brick works of Hinchliff & Son to run less than half time all the season.

The Pacific Coast Pottery Co., San Jose, Calif., are building a \$14,000 building and will manufacture, Terra Cotta, Tile and Conduits.

The Chester (N. J.) Brick Co., has been incorporated with \$25,000 capital stock. Incorporators are John A. MacPeak, Wm. F. Ideel, and F. R. Hansell.

F. H. Young recently from Springfield, is the manager of the Wilson Brick Co. at Windsor, Ct., and has taken up his residence at Mills Homestead station.

The Sheffield (Ia.), Brick & Tile Co. have their plans drawn showing a 12 kiln plant and the sale of the stock is going forward so the plant will be started this fall.

A party of men from Chicago, together with experts from Nashville, Tenn., are at McEwen, Tenn., inspecting the clays on the Capps property with a view of further developing same.

E. L. Sherrick and George Hatfield have started work on a new brick works near Murphy Siding, near Connellsville, Pa. They have fine clay and will manufacture a first class article.

The California Pressed Brick Co. has been organized and is building a plant at Niles, Calif., Jackson Dennis is president, J. J. Rutledge, vice president and James S. Smith, ceramic engineer.

The Pierre (S. Dak.) Brick & Tile Co. has been organized with \$25,000 capital stock. The incorporators are W. G. Bower, J. M. Bower, A. W. Ewart and C. E. Ewart. They moved their machinery from Vermillion, S. Dak.

At a recent meeting of the Salina (Kansas) Vitriified Brick Company, Frank Hagerman was elected a director to take the place of Leslie C. Gray, who has resigned and O. B. Thomas was elected secretary and manager to take the place of W. R. Whitney who has also resigned.

A new cement company has been organized at Muskegon, Mich., with \$1,000,000 capital. The officers of the company are J. W. Reynolds of Muskegon, president, A. G. Thompson of Chicago, vice president, I. Preston of Chicago, secretary, John W. Wilson of Muskegon, treasurer.

The New Era Lime, Cement & Stone Co., San Francisco, Calif., has been incorporated to build a cement works, capital stock \$1,000,000. The directors are G. L. Kennedy, Charles W. Norris and Charles King of San Francisco, W. H. Hawkins of Napa, Cal., L. M. Scofield of Oakland, Cal., E. D. Miles of Milwaukee, Wis., and S. C. Bartlett of Chicago, Ill.

The Burlington (Ia.) Brick & Tile Co. are turning out a very fine quality of hollow building blocks this season.

Arthur LeBlanc of Worcester, Mass., has received a patent on a machine for cleaning old brick.

The Standard Brick Mfg. Co., Evansville, Ind., will put in a continuous kiln at its west side plant.

M. W. Parrish, Ashboro, N. C., is interested in contemplated establishment of a plant for the manufacture of tiling.

John T. Boyle has taken the brickmaking contract for the Bradford (Pa.) Pressed Brick Co. in place of E. R. Dudley, resigned.

The Gay Head (Mass.) Fire Brick Co., is selling off all its fancy and common building brick and hereafter will make only fire brick.

The Little Rock (Ark.) Board of Trade has forwarded samples of clay to St. Louis parties who have requested same with a view of starting a brick and tile works there.

A company headed by E. R. Neblow, F. E. Colson and C. W. Williams, all prominent business men of Kennewick, Wash., has been formed and will build a \$10,000 brick plant.

The Kaysville Brick Co. of Salt Lake City, Utah, has filed with the secretary of the state an amendment to its articles of incorporation increasing its capital stock from \$50,000 to \$100,000.

A number of capitalists from the western part of the state have been examining clayhill at the head of 19th street Watervliet, N. Y., and if the property can be purchased the men will manufacture fire brick on a large scale.

The American Pottery Supply Co., Continental Bldg., Baltimore, Md., will rebuild their flint mill at Deer Creek, Md.

A. A. Coventry and others have located near Maryville, Tenn., a bed of Kaolin or Fuller's earth which they contemplate developing.

Charles Mader, Cottonwood, Idaho, has opened up a brick works two miles west of town and has burned his first kiln of brick quite satisfactory to him.

The Billings (Mont.) Pressed Brick Co.'s plant at Fromberg, will soon be ready for operation. Mr. Frank Church, one of the stockholders, will have charge of the plant.

The new brick yard which is to be built at Ft. Pierre, S. Dak., by Harland and others from Chicago, will be ready for the machinery by the later part of September.

The Carbrough Brick Co., Ft. Smith, Ark., is burning their second kiln of brick. The last run was extraordinary, 200,000 brick being burned with 1,874,000 feet of gas.

The Pierpont Brick Works of Salem, Va., are making extensive improvements to their plant. They are building a number of down-draft kilns and abandoning the old style up-draft kiln.

Shields-Chamberlain Co., Hackettstown, N. J., has been incorporated with \$10,000 capital stock to manufacture brick, stone, etc., by Thos. A. Shields, Emma E. Shields and Pierson M. Chamberlain.

The Lonsdale (Tenn.) Face Brick Co., is installing machinery for the manufacture of brick mantels. This will be an added department to the present plant. The Home office is at Knoxville, Tenn.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

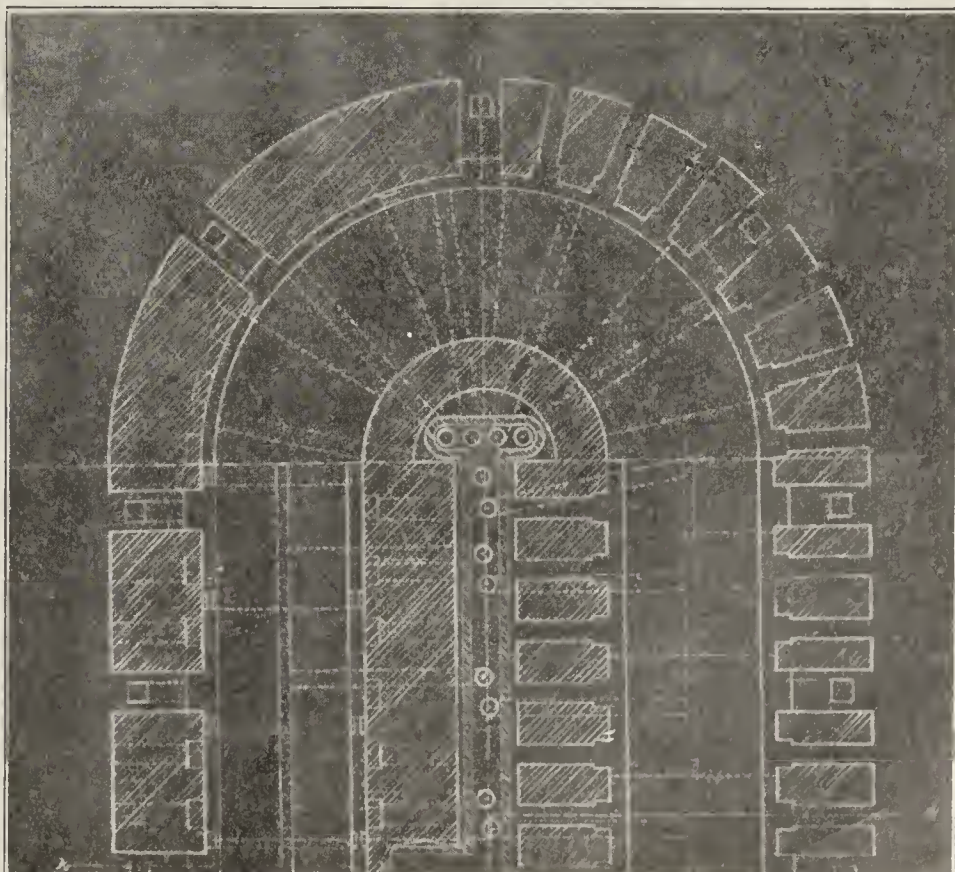
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

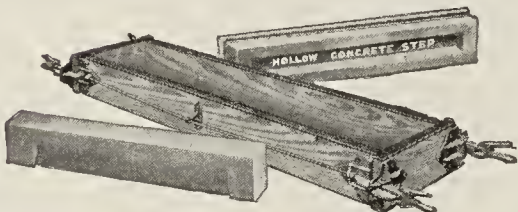
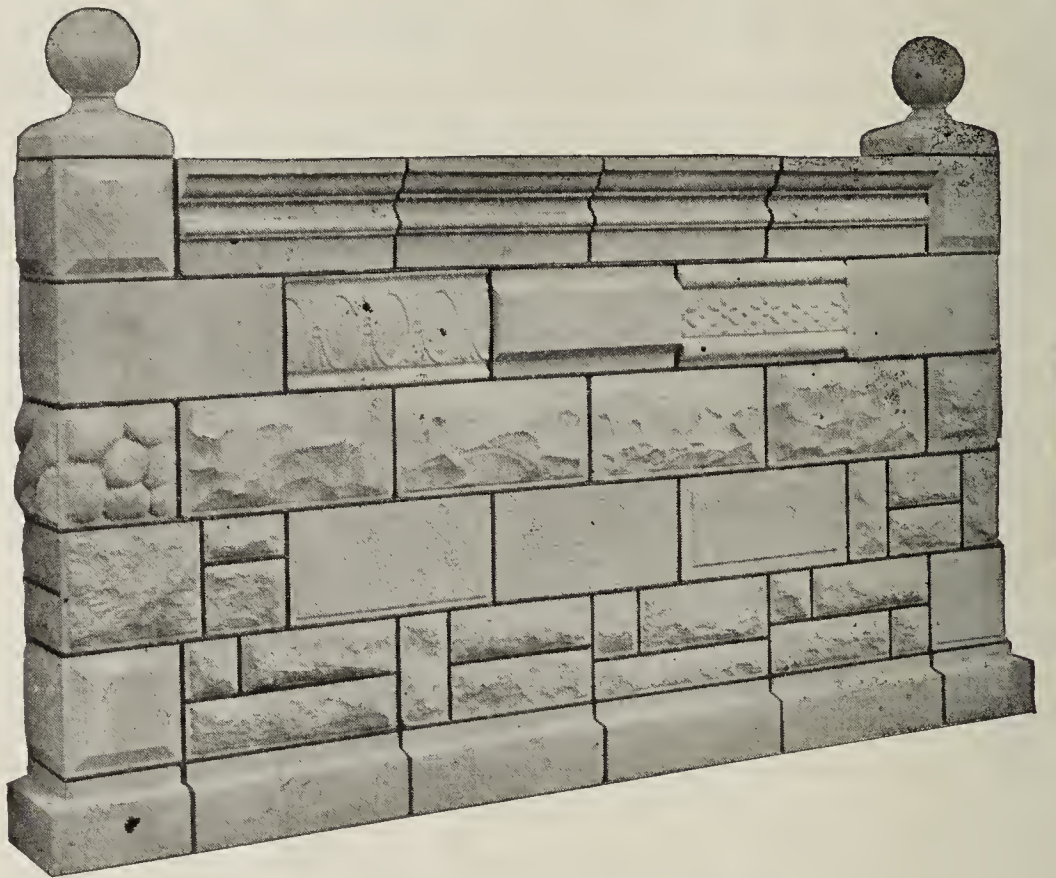
This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



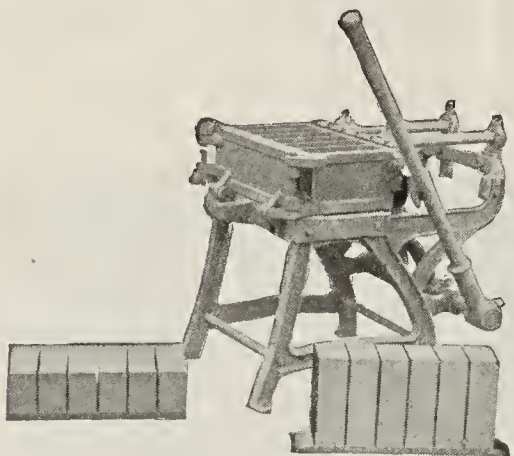
WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

What the Ideal Face Down Machine will do

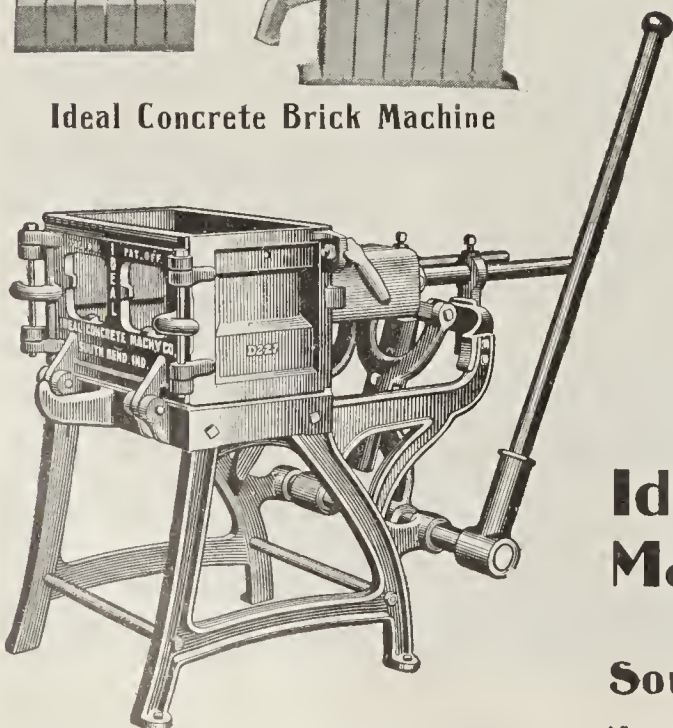
There is absolutely no limit to the artistic possibilities of the Ideal Concrete Block Machine. Of the almost endless forms and designs of blocks that a single machine can produce samples of a few are shown in cut. The "Ideal" is the only **Face Down** Concrete Block Machine in the world with practically unlimited adaptability as to size (within capacity), shape, and design of block. In addition to the only perfect Concrete Block Machine, we have the most complete line of Cement Machines in the world: Brick Machines, Mixers, Sill and Lintel Machines, Column, Spindle, Ball, and other Ornamental Molds.



Ideal Cement Sill Mould



Ideal Concrete Brick Machine



Ideal Concrete Block Machine
In 16 and 24 inch lengths

IDEAL Concrete Machinery

More than **three thousand** Ideal Concrete Block Machines are in profitable operation in the United States alone, and we have recently closed the largest single contract for block machines in the history of the cement industry. Within a period of thirty days we have made heavy shipments to Calcutta, Shanghai, Sydney, Khartum, Valparaiso, Mexico, Glasgow, Budapest, Bucharest, and Panama. Six carloads went to a single foreign country.

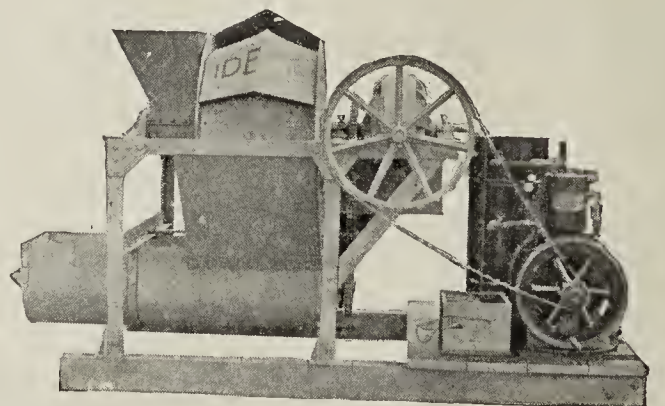
Our catalogue, magnificently illustrated, contains information of vital importance to Architects, Contractors, Builders, and those who manufacture Concrete Stone. Sent **FREE** on application.

Ideal Concrete Machinery Co.

Department W

South Bend, Indiana

Mussens Limited, Montreal,
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Ideal Concrete Mixer

The Cherry Red Pressed Brick Co., Correctionville, Iowa, will turn out large quantities of brick this season.

George Abraham and Albert Barr are contemplating starting a brick yard at Prescott, Iowa.

The firm of Johnson & Nelson has been awarded the contract for constructing the Lehigh (Iowa) Sewer Pipe and Tile factory at a cost of \$150,000.

The Paris (Texas) Press Brick Co. has been incorporated with \$20,000 capital stock. Incorporators are J. N. Blake, Edwin Jenkins and Wm. L. Jones.

The National Brick Machinery Co., Chicago, Ill., has been incorporated with \$25,000 capital stock. The incorporators are H. S. Simpson, J. H. Musson and John J. Davenport.

A. F. Keseberg and A. A. Keiser have bought the Sperry Brick Works at Amber, Mich., and will operate it to its fullest capacity. They plan to enlarge the plant next year and make modern improvements.

The Enterprise Brick Works Co., Tyler Ave. & Kings Highway, St. Louis, Mo., has purchased the ground upon which the plant stands which was held under a lease heretofore.

The Mason City (Iowa) Drain Tile Co., has been incorporated with \$100,000 capital stock. The officers of the new company are O. J. Denison, president; F. A. Stephenson, vice president; F. E. Keeler, secretary and L. W. Denison, treasurer.

A complete reorganization of the Black Hills Porcelain Clay & Marble Co., Custer, S. Dak., has taken place, the stock has passed from Michigan and Ohio parties to Chicago hands, and its mica ground has been leased to Sioux City, Iowa people who plan extensive development.

The new plant of the Muskogee Brink & Terra Cotta Co. East of Columbus, Ga., is now in operation and turning out brick on a large scale.

E. S. and J. L. Shener of Cullom, Ills., have purchased land near the C. M. & St. Paul Ry. station at Jackson, Minn., and expect to erect a tile factory at once.

The Weston (Oregon) Brick Works has added a new line of work having taken over the hay warehouse under lease from the owners, MacKinzie & Ashworth.

O. W. Jordan, formerly of Ottawa, Ills., is now the superintendent of the Red Cliff Brick Co., at Medicine Hat, Alberta, Canada. The company is capitalized at \$150,000 and is owned by capitalists from Minneapolis, Minn.

The Canal Winchester (O.) Brick & Tile Co. has been incorporated with \$30,000 capital stock. The incorporators are C. L. Boyer, Wm. D. Boyer, Wm. T. Heilman, E. C. Chaney and Ben Cramer.

Straight Bros. of Fonda and Spencer, Iowa, have made arrangements to build a \$125,000 tile plant at Adel, Iowa. H. R. Straight, who recently took a course at the Ceramic School at Champaign will have charge of the plant.

The Standard Fire Brick Co., Providence, R. I., has been incorporated with \$100,000 capital stock. The incorporators are William G. Titcomb of Wyatt; Parker L. Monroe of Providence and Everett I. Walling, of North Smithfield.

The C. E. Preston Brick Works at Attica, Ind., will soon be put into operation. At present they have only four down-draft kilns but expect to erect at once four more and next spring will add four more, making 12 in all.

The GILLETT DOORLESS GRATELESS

**Hot Air FIREBOX For
Blast Kilns**

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

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GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

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Brick Plant on three railroads, within two blocks of paved streets, in prosperous town. Address: EDWIN A. WILSON, Marine Bank Bldg. Springfield, Illinois

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Where a country is tiled, factories are offered complete, or in part. Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery
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We install and equip complete plants for manufacture of Egyptian Plaster Plates, the popular new building material now in great demand. It's inexpensive and modern. Nailed on like boards. Only a small investment, and you have exclusive territory protected by patents.

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BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.

Address: "Manager" Care of Clay Record
Chicago, Illinois

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enameled Brick & Tile Co.
1 Madison Ave. New York

FOREMAN WANTED

By a tile and brick plant in Central Illinois an outside yard foreman to take charge of setting and emptying kilns, car loading, etc. Address stating experience and wages desired.

A. B. CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.

39 Cortland St., New York.

50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
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FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address

LOCK BOX 29 CARE OF CLAY RECORD
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BRICK YARD FOR SALE

Old established yard in good town of 5,5000 peoples with good country surrounding. 45 acres, good kiln and sheds. Good reason for selling. Call on o address

CHARLES MCNEAL
Maryville, Mo.

WANTED

A competent and experienced manager and sales man for sand line brick factory. Address

BUSINESS MAN CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
Leesville, La.

WANTED

Wanted Stoneware Potter—both wheel and Kiln men, Write to
SPOKANE POTTERY CO.
Clayton, Wash.

WANTED

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment.

Address: B, C., care Clay Record
Chicago, Ill.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,
Care Clay Record, Chicago, Ill.

MEN WANTED

Three (3) or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address:

Supt. Missouri Slope Brick and Tile Co.
Dickinson, N. D.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$35.00.

C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Palletts. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
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WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS
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PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
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FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
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No better made, cut from
\$8 and \$10, to
4 Wheel, \$3.00
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Guaranteed.
Sold by all dealers
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MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co. Pittsburg, Pa. Salineville, Ohio.

MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make A1 brick; understand machinery; good business ability; the management of men; have unquestionable habits; first class reference. Address in full and in confidence stating salary expected. X. Y. Z. Care Clay Record, Chicago, Illinois

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer. BAKER IRON WORKS
Los Angeles, Cal.

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.

Box 81.
Independence, Iowa

GAS ENGINE FOR SALE

FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Answer,

Gas Engine, care Clay Record
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Startling sacrifice—Completely equipped ornamental brick plant, excellent quality clay, on Baltimore & Ohio Railroad in Ohio, has been bonded for \$80,000.00; for sale unencumbered for \$10,000.00 cash. Address:

E. E. SLOCUM
141 Broadway, New York

BRICK PLANT WANTED

At Wenona, Illinois., one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacent, Plenty of artesian water. For information address:

WENONA COAL COMPANY
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If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address FRANK P. CLEVELAND,
1726 Adams Express Building
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FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.

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FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash.

POSITION WANTED

By an experienced Potter as Superintendent on turning, glazing, kiln cutting or burning.

Address: N. Z. care of Clay Record
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ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

79 Chamber of Commerce,
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Vol. XXXI. No. 5.

CHICAGO, SEPTEMBER 14, 1907.

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Single Copies, - 10 Cents

EFFLORESCENCE OF BRICK

(Continued from last issue.)

Summary.

To sum up, kiln and dryer white can be avoided by using only fresh clay, by weathering and washing it, by the use of barium, by quick drying, by alternately reducing and oxidizing when finishing the burn; or by coating the face of the brick with coal tar or wheat flour.

Wall White.

The composition of wall white is somewhat more varied than kiln white and several additional factors enter into its production. As examples of the different modes of occurrence and composition of the efflorescence I will mention a few samples that were collected from some of the buildings of the University of Illinois.

From the above it will be readily seen that the sulphates of magnesium and calcium are the most constant constituents of the efflorescence, although sodium and potassium may be present. The carbonates are also a fairly constant part of the whitewash and occasionally chlorides may be present. In No. 10 the principal salt of efflorescence was found to be sodium bicarbonate. This particular efflorescence was peculiar in that it deliquesced and became syrupy after it was corked up in the specimen tube. Sodium and potassium are probably more frequently present than these results would indicate, as with the means at hand it was not possible to detect small amounts of these substances with certainty. In fact, analyses made here a few years ago by Steinmeyer, thesis 1902, Chemical Department, showed them to be present in all the specimens of efflorescence examined at that time.

All of the efflorescences are not white, but are discolored more or less by the soot that finds lodgment in them. Some are green, as was No. 11, but the amount of the efflorescence that could be collected was too small to determine the coloring matter. Seger states that some green efflorescences he examined were colored with salts of Vanadium. Other writers have ascribed the color to iron and chromium. Unfortunately not enough of the green was

found for examination and nothing further can be added at this time. It is certain if vanadium is the cause it does not exist in the clay in a soluble form before being burned, as both Seger and Gerlach were unable to find it after lixiviating large amounts of clay. The green efflorescence seems to occur only on the lighter brick and has not been observed on the red brick so far. Much of the greenish scum appearing on the walls especially in damp places is due to a minute plant and is not an efflorescence at all.

Means of determination. It was thought that it might be possible to determine the main constituents of any efflorescence by observing the forms of the crystallized salts as they appeared on the wall and with this end in view a number of briquettes were made of a surface clay that had been thoroughly washed to remove any soluble salts that might be present. After being burned, these were placed in 0.5% solutions of the sulphates of calcium, magnesium, iron, sodium, and potassium, the carbonates of sodium and potassium, and sodium bicarbonate. The briquettes were left with their tops exposed to the air and after the efflorescence had appeared they were taken out of the solution and dried. As before, the sulphates took the lead, especially the sodium, iron and magnesium sulphates, although the sodium carbonates were not far behind. One surprising result was that the potassium and sodium salts did not effloresce. Consequently, the small amount of the salt that came through remained in two or three small white knobs. The main result was, however, negative, for as soon as the salts crystallized on the surface they effloresced, and all crystalline form was lost.

Again it was thought that it might be possible to dissolve a little of the efflorescence in distilled water and allow it to crystallize by the evaporation of the water. Then, since each salt should crystallize by itself, the composition of the efflorescence could be determined by examination of the crystals. With the pure solutions of the salts in this plan worked very well, but on mixing them, as would be the case in the efflorescences, it was found that the salts as a rule no longer retained their characteristic forms and the plan had to be abandoned. The reason for this seemed to

*University of Illinois Bulletin, Vol. 4, No. 4.

be the fact that the several crystals formed were so superimposed as to hide their shape.

Occurance of wall white. Referring again to the efflorescences described, with reference to the places where they are most apt to occur, it will be seen that they only appear as a rule where there is excessive moisture such as near the cornices, near the ground where the water in the soil passes up through the foundation and evaporates and where the wall carries or has water pipes or radiators near it. In other words, the efflorescence is not troublesome except where there is plenty of water to bring it out. The rain undoubtedly has something to do with the appearance of the efflorescence on the walls, for it is a well-known fact that a dry brick will absorb water very quickly. So with every rain

carry the salts to the surface either through direct leakage or by condensing the moisture of the air upon them and thus keeping the wall damp. The foundation is generally in intimate contact with the soil and the water in the soil, traveling through the capillary pores of the soil and the wall, evaporates on the wall just above the ground. This again causes the salts to be gathered on the surface to the brick and again the disfiguring whitewash appears.

In every case of efflorescence I have been able to examine the blotches were caused by an excess of water produced in one of these three ways. Often on buildings not supposed to whitewash the faint even coat produced by the leaching action of the rain could be seen, showing that if care were taken to prevent the other causes, the whitewash

Building	Brick	Mortar	Position, form, color, etc.	Composition
1. Engineering	Yellow pressed	Lime	Efflorescence noticeable on all of the brick, not on the mortar. Especially thick on a column that had water pipes behind it, also bad patches where radiators were near wall. Also on sand stone in first story near entrance which projects from the building.	MgSO ₄ , with trace of Ca and Cl.
2. Agricultural	Yellow pressed	Lime	On brick wainscoting in hall. Sink just back of the wall. Efflorescence white in a patch just below the level of the sink.	MgSO ₄ , and trace of calcium.
3. Agricultural	Bedford lime stone	Lime	White efflorescence on first story on the north wall of creamery.	CaSO ₄ , and NaCO ₃ .
4. Wood shop	Red pressed	Lime	White efflorescence especially bad on the north wall near cornice.	MgSO ₄ and NaCl.
5. Library	Brown sand stone	Lime colored red	White efflorescence on front of the building near cornice. Generally on or near the mortar.	Not determined. Probably a sulphate.
6. Pier back of Engineering Building	Red, common	Neat cement	White efflorescence on both the brick and mortar, near the top.	CaSO ₄ , trace of CO ₂ .
7. Pier back of Engineering Building	Red, common	Lime	White efflorescence on brick and mortar near the top.	MgSO ₄ , trace CO ₂ and Cl.

storm there is a certain amount of water that penetrates the brick and brings out the soluble salts and deposits them on the surface when it evaporates again. As the salts, calcium sulphate excepted, are very soluble, the rain washes off what was deposited from the last rain and so the efflorescence is not large in amount at any one time, and besides, as it is evenly distributed over the wall, it is not unsightly.

At the cornices where the water of the roof is concentrated, especially if the gutters leak, the water is able to enter the wall and to travel a distance through it before it evaporates from the surface. During its passage it dissolves the soluble salts of the brick and mortar, and carries them to the outside of the wall. As the part of the wall where the salts are deposited is generally rather limited in extent the result is an ugly blotch that disfigures the building. In the same way water pipes or radiators supply the necessary water to

from this cause would not be troublesome.

Pressed brick are especially subject to this disfigurement, since their smooth surface shows every spot. It has often been observed that sand-molded brick did not show efflorescence, while pressed brick made of the same clay would. This can be explained only by the difference in the structure of the faces of the two bricks. The rough surface conceals the little pimples raised by the salts and besides retains more dust and dirt with which to color the efflorescence, while on the smooth surface of the pressed brick the salts stick out obtrusively and retain their natural whiteness, since the dust and soot that colors them must come from the air.

Again the law of adsorption explained in regard to the drying of the brick holds good here. The pressed brick have a dense surface and fine pores, necessitating slow evaporation, while the sand-molded brick are more porous

and water can evaporate from them more rapidly. In consequence the greater amount of efflorescence is brought to the surface of the pressed brick.

The sources of the wall efflorescence lie in the brick, the mortar, or in materials brought in contact with them as water, soot, or refuse.

As has been stated in explaining kiln white, practically the only soluble salts left in the brick are the sulphates of calcium and magnesium. These may have been originally in the clay or may have been formed in the brick during the process of manufacture through the reaction of the pyrite in the clay and coal with the carbonates in the clay. The manner in which these salts affect efflorescences differs.

Of the two, magnesium is much the more soluble and, as we have seen, effloresces much more freely. On the other hand the calcium sulphate once formed on the surface of the wall is much more difficult to remove. Again, while the magnesium generally effloresces unaltered, the calcium is more apt to react with the carbonates of magnesium, sodium, and potassium brought into the brick by the water from the mortar, forming calcium carbonate which is quite insoluble and remains in the interior of the brick, while the sulphates of magnesium and sodium formed by this reaction, effloresce. This was well illustrated in the first case mentioned, where it was possible to pick bits of calcium sulphate from the face of the brick with a knife, while the efflorescence consisted almost entirely of magnesium sulphate.

The lime in the mortar furnishes the sulphates, carbonates, and chlorides of calcium, magnesium, sodium and potassium. The sulphates are formed during the burning of the lime by the reaction of sulphurous gases formed by the burning coal with calcium, etc., of the limestone. This reaction is the same as was worked out by Guenther and Gerlach in the brick as a cause of kiln white, but as far as I know has not been mentioned as a possible cause of the wall whites. Such samples of lime and mortar as were at hand were found to contain considerable soluble sulphates and it seems possible that this is one of the most fruitful causes of the wall white. Surely it offers an explanation for many cases of efflorescence that were due to the mortar, but which was difficult to prove because the sulphate came from a medium which was principally composed of carbonates.

The sand and water used in the mixing of the mortar may, under exceptional circumstances, be responsible for efflorescence, but as the sand used has generally been washed over and over again by the streams and circulating earth water, it is not reasonable to suppose that any amount of soluble material remains. Only in some situations where water circulating through the bed of sand is charged with material in solution can there be any deposited in it. Again the amount of salts in the water used in the mortar is so small, as a rule, it is hardly possible to believe it could cause any amount of efflorescence.

Other things added, such as coloring matter, salt, are very often responsible for the trouble. The oxide of iron generally used to color the mortar red is made by heating iron sulphate and generally all of the sulphate is not decomposed. This reacts with the lime to form soluble sul-

phates and these in turn effloresce. This particular case was well illustrated by example No. 5, where the stone is a very porous silicious sandstone laid in red mortar, the efflorescence indicating its origin by appearing on or near the mortar.

Again, sodium chloride, or common salt, is added to the mortar in winter time to keep it from freezing before it sets. This salt comes out on the surface of the brick as soon as it has the water to carry it and appears as efflorescence. This was illustrated by example No. 4. An analysis of this efflorescence showed it to consist of more than 80 per cent. of salt.

Besides by the brick and the mortar, efflorescence is often caused by substances in contact with the brick. The efflorescence of brick stacked in stock piles is often caused by the cinders upon which they are stacked. The cinders contain sulphates from the coal from which they were formed and the water of the ground seeps up through them and through the brick evaporating from the faces of the brick and leaving the salts behind. Manure thrown against the wall will cause efflorescence through the nitrates and other soluble salts it contains. This is abundantly illustrated on stable walls and was first noticed there, the nitre found giving its name to all efflorescences. The soil contains nitrates especially where there is abundant vegetation and this occasionally enters the wall to appear higher up.

Benfy¹ explains the appearance of an efflorescence on the walls of buildings in Chicago by the leaching out of the sulphates of the soot, adhering to the walls by the rain which then entered the brick and evaporating, left the efflorescence behind, the soot having been washed off in the meantime.

If the water seeping through the wall has much material in solution, it is possible it would cause efflorescence on evaporation.

As will be seen from the above, the causes of wall efflorescence are numerous, and one, at least, is omnipresent, the sulphate in the lime. If this is the case, why is it that every brick building does not show efflorescence? The answer is clear. No building can have efflorescence unless there is a supply of water to bring it out. The rains can do no more than bring out a faint even coat that is washed off by the succeeding rain. This is not a disagreeable thing and the efflorescence only becomes a nuisance when it is collected in blotches. What, then, is the remedy?

Make the walls as impervious as possible. Use well burned brick, lay a drain around the foundation and coat the foundation with a good waterproof paint before the ditch is filled in; likewise water-proof the walls and flues that convey water, or steam pipes. Take care that the cornice and roof is watertight. Attention to these simple things during the erection of a building will mean a clean wall and a much improved appearance.

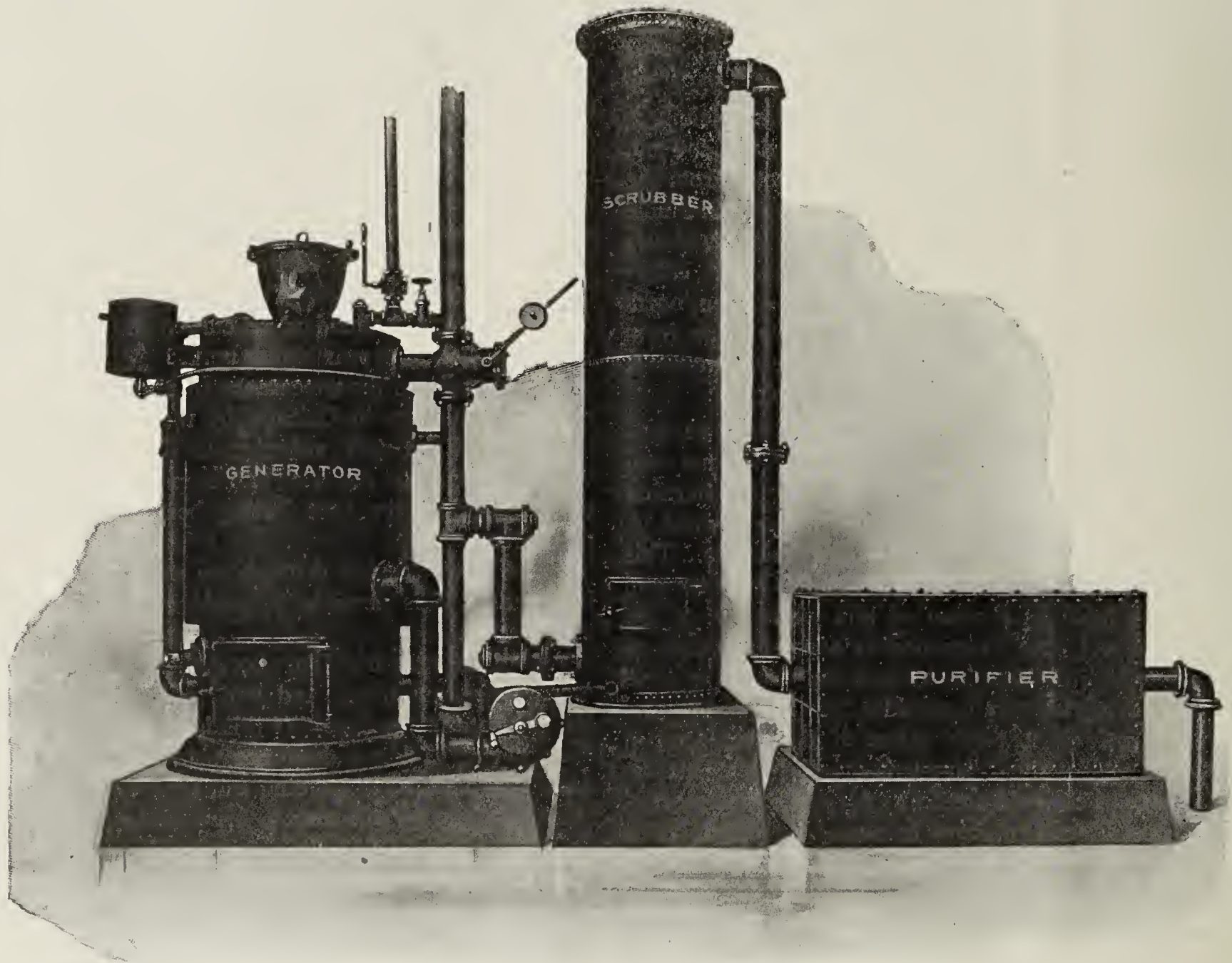
After the building is finished, if the efflorescence comes out, there are only a few things that can be done. The walls may be painted which conceals the brick as well as the efflorescence and is liable to peel off in the damp spots. The walls may be treated with paraffine or linseed oil, which will darken the brick but not conceal them entirely. Then, as before, all source of water supply to this wall must be stopped if possible. In that way alone is there any hope of success for the present.

GAS ENGINE AND GAS PRODUCER

The New Era Gas Engine company, of Dayton, Ohio, has just installed in the plant of the P. Hagerty Shoe company one of the most economical power plants of this age, consisting of a 35-horse-power New Era gas engine and a 50-horse-power New Era automatic suction gas producer, which plant furnishes the factory with power to operate their machines.

The fuel used to operate their former New Era gas engine, which was a 25-horse-power, was manufactured gas, costing the P. Hagerty Shoe company four dollars (\$4) per day. Since installing the New Era gas engine and producer their fuel bills have been cut down to one dollar (\$1) per

four hours. The generator is lined with fire-brick, which can be easily replaced. The grate can be cleaned and the generator thoroughly clinkered and the ashes removed in a few moment's time. The evaporator is located on top of the generator and is filled with water, over which a current of hot air is passed, and as the water in the evaporator is at a very high temperature from the heat in the generator (the fire being kept burning continuously), the air in passing absorbs moisture and passes down through a pipe to underneath the grate in the generator and through the fire in the generator. In doing this the saturated air or steam is converted into gas. The gas then passes through a pipe from the generator to the scrubber. The constant suction of air



NEW ERA SUCTION GAS PRODUCER, MADE BY NEW ERA GAS ENGINE CO.

day. This wonderful power plant is worthy of a brief description, and those that are interested in power plants will be interested in knowing that the gas engines and gas producers are rapidly taking the place of steam engines and boilers on account of the great economy in operating a gas engine and producer.

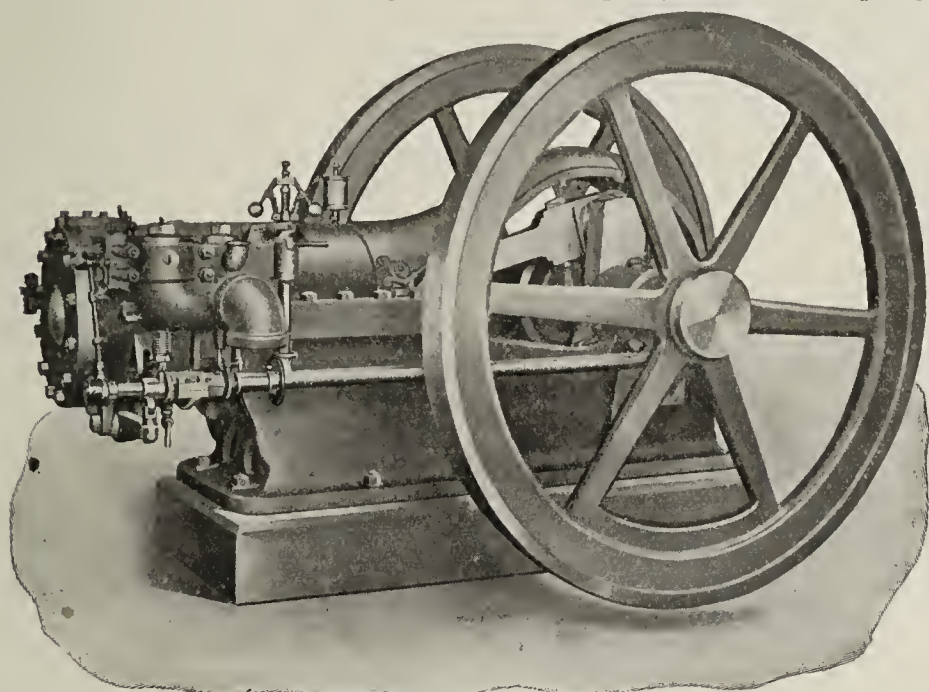
The New Era automatic suction gas producer consists of a generator, scrubber and purifier, all built of steel boiler plate. The fuel used to produce gas in the generator to operate the gas engine is anthracite pea coal. The generator is very simple, and will hold enough coal for one day's run, and requires charging with coal but once in twenty-

through the producer is kept up during the time the gas engine is in operation, caused by the outward or suction stroke of the piston in the gas engine.

The scrubber, which is twelve feet high and thirty-two inches in diameter, is filled with coke. The gas enters the scrubber at the bottom by pipe from the generator and passes upward and meets with a spray of water from the top of the scrubber, which process cleans and cools off the gas, then passing from the scrubber to the purifier. The purifier, or gas holder, dries the gas and removes the sulphur and other impurities, and forms a reservoir for the engine to draw from.

When the gas engine is in operation the suction of the piston draws the gas from the producer through a pipe into the cylinder of the gas engine, and the gas is then compressed and fired by means of an electric spark, which creates an explosion, thus producing the power in the gas engine.

The New Era gas engine is a magnificent piece of machinery, and the 35-horse-power New Era now in operation in the P. Hagerty Shoe company, in connection with the New Era automatic suction gas producer, is the third New Era gas engine purchased by the P. Hagerty Shoe company.



NEW ERA GAS ENGINE

This factory first started with a 14-horse-power New Era, and as their factory increased in size, their requirements for power increased.—Washington C. H., Ohio.

PROPOSED DEVELOPMENT OF THE STONE, CLAY AND COAL DEPOSITS AT LEHMANN

William A. Phillips, capitalist, T. R. Lehmann, a business associate of Mr. Phillips, and O. J. Olinger, general manager for the clay manufacturing concern, all of Iowa City, Iowa, were in Canton, Ill., in connection with deal which, if it goes through, will open up the quarry, clay beds and coal fields of the town of Lehmann. Lehmann is located 20 miles west of Canton on the T., P. & W. road.

The properties in question include a tract of 700 acres. They were owned until recently by Mrs. Kate P. Lehmann, of Cincinnati, widow of the late R. F. Lehmann, who started in to develop these deposits many years ago. Mrs. Lehmann sold her interest in the tract last July to Joseph A. and Orogen S. Dean, of Sioux City, Iowa, the transfer being engineered by Attorney G. B. Grant, of this city.

The Deans bought the place for its agricultural and stock-raising advantages. The soil deposits never entered into their calculations when they acquired the land. It was their idea to lease the latter out on royalties, whenever they decided that the mineral beds should be developed.

Messrs. Phillips, Lehmann and Olinger are interested in the clay industry. Learning that the Lehmann tract contained a clay bed 14 feet deep and of practically inexhaustible supply, they opened negotiations to lease the property. Their visit to Lehmann now is to ascertain if the field is as rich in clay deposits as they have been led to believe.

TEXAS BRICK MANUFACTURERS HOLD MEETING

Austin, Tex., Sept. 12.—The mid-summer meeting of the Brick Manufacturers' association of Texas was held in this city yesterday with an attendance of about twenty-five out of a membership of forty. An interesting program had been prepared and was discussed at length. Corsicana was selected as the next place of meeting to be held in February.

President C. R. Sherrill of Corsicana delivered an interesting address dealing with the work and educational features of the association and various matters pertaining to the manufacture of brick. Papers were read and addresses made on the following subjects which were also cussion by the members.

"Best Clamp Construction for Common Brick," Leon Keeble of Elgin.

"Cement Block and Reinforced Concrete Competition," discussed by J. M. Harry, Dallas; Thomas Miller, Rusk, and C. R. Sherrill of Corsicana.

"The Advantage of Association Work," William Weatherford of Ferris.

"A Modern Brick Plant, Its Advantages and Construction," J. J. Glebhill, St. Louis.

"Watersmoking and Drying Brick by Waste Heat from Updraft Kilns," A. R. Harwood, Gonzales.

"System of Keeping Cost of Production," general discussion by the members.

"Texas as a Field for Clayworking Industry," W. G. Sneed, Austin.

"Best Method of Handling Material from Pits to Grinding Machine," Davis Duff, Ferris; Walter Bennett, Millsap, and T. G. Cole, Ferris.

Two sessions were held, one at 10 o'clock in the morning and the other at 2:30 o'clock in the afternoon. In the evening the visiting members were entertained by the local members of the association with a smoker.

The officers of the association are as follows: C. R. Sherrill, Corsicana, president; T. G. Cole, Ferris, vice-president; Cal Swartz, Corsicana, second vice-president; J. M. Harry, Dallas, secretary and treasurer. These gentlemen with the exception of Mr. Swartz, were all present and also the following: Leon Keeble, Rusk; Thos. Miller, Rusk; William Weatherford, Ferris; J. J. Glebhill, St. Louis; A. R. Harwood, Gonzales; W. G. Sneed, Austin; A. J. Zilker, Austin; Davis Duff, Ferris; S. M. Johnson and Geo. R. Page, Laredo; D. R. Boone, Oglesby; M. T. Carlton and M. T. and E. R. Smith, Elgin; C. W. Williams, San Antonio; E. J. Byrne, Austin, and M. W. Staniforth, Gainesville.

This was the third meeting of the association, which was organized about a year and a half ago. Much interest is being shown in the work and six new members were received yesterday. The delegates to the meeting of the National Association of Brick Manufacturers, to be held probably at Columbus, Ohio, in February next, will be selected at the meeting of the Texas association to be held in Corsicana.

TURNING OUT 45,000 BRICK DAILY

Simon Kline, brick manufacturer, West Reading, Pa., is turning out 45,000 brick a day. These are all made by machine and disposed of to Reading builders. He has been in the business 55 years, employs 48 hands and although 78 years old, can be seen almost daily at his brick plant.

A paper read before the Twenty-first Annual Convention of the National Brick Manufacturers' Association of the United States of America, St. Louis, February, 4-9, 1907.

MECHANICAL VERSUS HAND WORK

By W. H. ALSLIP, WINNIPEG, MANITOBA

In the city of Pittsburg, sixty years ago, my father, then a boy, made a brick by hand; the only mechanical appliances, if they may be so called, were a spade, wheelbarrow, table, bow and two two-brick molds. A brief description of a gang making hand-made brick with these mechanical helps may be of interest to some of our younger brothers who have installed an up-to-date plant equipped with all the latest appliances and have never known the hardships of a hand yard. The owner of a hand yard, after determining the amount of brick he wished to make, would start in the fall by weathering his clay. This process many of our manufacturers follow to-day. To weather the clay the bank was undermined and caved down, then cast over with a spade and left to freeze and thaw until spring. This reduces all the lumps and puts the clay in condition to be tempered with the least amount of labor, which was very necessary, as you will see later on.

In the spring the gang, consisting of four men and a boy, were hired by the month without board. The moulder received thirty-five dollars, the three men twenty-six dollars each and the boy fifteen dollars. This made a daily wage of four dollars and eighty-five cents per day for the gang.

Thirty-two hundred brick was a day's work for this gang, who took the clay from the weathered pile and made it into brick, which they stored in the shed built for that purpose. The clay was taken from the weathered pile with a spade and cast into a pile called the soak pile, where water was added and then it was left to soak over night.

Next morning the clay was slashed out or tempered with a spade until in proper shape for the moulder. It was then loaded on an old-fashioned wheelbarrow, where the man carried most of the load by the aid of a strap over his shoulders, to the moulder's table located on the drying floor, where he would again, by the use of his spade, deposit the clay on the table which had been sanded to keep it from sticking.

The moulder with his hands cut a clod from the clay and, after giving it a roll on the table, drove it into the mould, which had been wetted and sanded and placed before him by the off-bearer. The surplus clay, called caps, was cut off the top of the mould with a bow and wire and the caps thrown back onto the table. The off-bearer took the mould and dumped the brick on the floor or ground, which had been leveled off to receive them. The bricks were next edged and hacked and when dry enough were wheeled to the storage shed where they were kept until one hundred thousand or more were made. Then the making was stopped and the kiln filled and burned. This was hand-work brick making as my father knew it when a boy. On a hand yard to-day a striker will mould 8,000 brick in a day. His

clay is ground by horse power, otherwise he has little advantage over his father of sixty years ago.

Hand-work in the brick yard, like the stage coach, will soon be a thing of the past. It has filled its mission and, while some of the work in a modern yard is done by hand, the ratio is about the same as the amount of mechanical appliances was in the yard I have just described. Mechanical-made ware, where the workmen have only to look after the machines through most of the stages of its manufacture, is a blessing to mankind. Much of the drudgery of the hand yard is eliminated. The workman after his day's work, returns to his family with some spirit left in him, which makes life what it should be, well worth living.

The age when men object to machinery lessening the labor required to produce the necessities and luxuries, which even the man who labors expects and should enjoy, is passing away.

To-day a man who discovers or invents anything which is a benefit to mankind, is looked upon as a public benefactor; our laws are framed and passed to encourage and protect him in his work. The result of this policy is that the clayworker of to-day has at his command machinery that relieves him of much of the heavy manual labor which was necessary in our father's time.

Looking back through the ages we see many of our great benefactors who, after years of toil and study, invented great labor-saving machines, which, when introduced, brought only persecution and condemnation.

Each year marks improvements in equipment, from the clay bank or mine to the delivered ware. With all this advance in improved machinery we still face the problem of how and where we can procure the labor necessary to produce the quality, quantity and kinds of goods required to keep up with the urgent demands that our country, in this era of prosperity, places upon us.

The manufacturer is looking to the machinery man and inventors for improved methods, which will enable him to produce not only more and better ware, but make it at less cost.

Many of the manufacturers have closed their books for the year of 1906 and find their profits much less than for 1905. They have analyzed their cost accounts and find that nearly everything that enters into the cost of the manufactured ware has advanced in price, while the sales price has remained about the same. The manager is convinced that he must do something to protect his profits and first turns to the most natural remedy, which is to raise the selling price. After careful investigation he decides that this will not be wise, as structural steel, cast concrete, sand-lime and sand-cement brick are in the field and are ready to fill the place of clay brick if given the chance. The only other remedy is to produce the brick at a less cost. This is what every progressive brickmaker of to-day has been and is trying to do. He is looking for machinery that will make more and better brick at a less cost. He is installing the best machinery, adopting the latest methods and equipping his plant with the best his means will afford.

CLAY PRODUCTS OF THE UNITED STATES, 1906,

WITH CORRESPONDING TOTALS FOR 1905.

STATE	RANK	COMMON BRICK			VITRIFIED PAVING BRICK OR BLOCK			FRONT BRICK			FANCY OR EXTRA-BEST BRICK (Value)	DRAIN TILE (Value)	SEWER PIPE (Value)	ARCHITECTURAL TERRAZZO (Value)	FIRE-PROOFING BLOCKS (Value)	HOLLOW TILE OR BLOCKS (Value)	TILE (NOT LINED) (Value)	STORE LINED (Value)	FIRE BRICK			MISCELLANEOUS (Value)	TOTAL BRICK AND TILE (Value)	POTTERY (Value)	TOTAL (Value)	PER-CENTAGE OF TOTAL	STATE
		Quantity (Thousands)	Value	Average Price (Thousands)	Quantity (Thousands)	Value	Average Price (Thousands)	Quantity (Thousands)	Value	Average Price (Thousands)									Quantity (Thousands)	Value	Average Price (Thousands)						
Alabama.....	91	166,225	\$1,046,666	\$6.30	(b)	(b)	(b)	(b)	(b)	\$11.65	(b)	\$2,665	(b)	(b)	(b)	(b)	(b)	(b)	2,094	\$1,017,147	\$17.66	\$26,602	\$1,650,903	\$37,996	\$1,688,899	1.08	Alabama
Arizona.....	46	10,656	93,014	6.49	(b)	(b)	(b)	(b)	(b)	60.00	(b)	2,766	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	18.16	180	63,694	637,996	96,694	.06	Arizona
Arkansas.....	34	79,605	466,633	6.77	(b)	(b)	(b)	(b)	(b)	11.26	(b)	8,766	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	10.16	700	613,694	10,500	666,194	.36	Arkansas
California.....	8	276,780	1,862,686	7.06	(b)	(b)	(b)	(b)	(b)	18.46	(b)	60,545	\$327,477	\$254,980	\$66,066	\$21,600	\$63,028	(b)	14,773	\$47,306	\$4.67	66,065	4,863,838	98,567	4,962,405	2.71	California
Colorado.....	16	120,944	787,094	6.51	6,966	\$74,460	11.63	24,147	226,770	10.68	\$2,406	6,186	(b)	(b)	(b)	(b)	(b)	(b)	14,330	\$78,407	19.80	76,266	1,784,005	47,063	1,831,068	1.14	Colorado
Conn. and Rhode Island.....	20	312,645	1,503,926	7.07	(b)	(b)	(b)	(b)	(b)	16.51	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	32.00	(b)	1,616,761	6,196,444	1,747,206	1.08	Conn. and Rhode Island
Delaware.....	43	28,004	689,666	7.96	(b)	(b)	(b)	(b)	(b)	16.97	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	20.06	(b)	237,766	(b)	237,766	.16	Delaware
District of Columbia.....	66	69,667	242,066	7.43	(b)	(b)	(b)	(b)	(b)	16.06	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	30.86	336,166	(b)	(b)	336,166	.21	District of Columbia
Florida.....	39	42,635	965,224	6.69	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	20.00	(b)	666,644	(b)	(b)	.16	Florida
Georgia.....	13	603,266	1,783,666	6.68	(b)	(b)	(b)	(b)	(b)	6.91	(b)	13,000	221,000	(b)	(b)	(b)	(b)	(b)	2,356	(b)	14.43	7,000	5,960,667	20,267	5,980,934	1.46	Georgia
Idaho and Nevada.....	40	69,787	972,174	6.01	(b)	(b)	(b)	(b)	(b)	32.75	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	60.00	(b)	323,866	(b)	(b)	.18	Idaho and Nevada
Illinois.....	5	1,106,610	5,719,906	4.76	127,227	1,306,476	10.66	30,022	341,666	11.67	11,635	1,066,666	567,606	(b)	408,171	7,767	(b)	(b)	14,646	236,036	16.16	\$4,330	11,631,976	386,908	12,018,884	7.88	Illinois
Indiana.....	6	307,076	1,776,570	5.76	45,725	502,609	10.66	65,060	386,366	11.97	4,700	1,676,441	466,667	(b)	323,016	96,404	(b)	(b)	14,074	146,661	10.61	442,146	6,334,641	306,663	7,186,384	4.44	Indiana
Indian Territory.....	37	41,913	966,606	6.03	2,169	90,331	6.83	763	8,413	11.48	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	17.10	17,100	299,790	(b)	(b)	.19	Indian Territory
Iowa.....	9	166,671	1,118,706	6.66	16,630	186,960	10.66	6,871	101,765	11.46	(b)	1,761,614	(b)	(b)	166,664	(b)	(b)	(b)	67	660	16.66	6,064	6,411,067	66,000	6,477,067	2.18	Iowa
Kansas.....	12	314,671	1,676,632	4.36	(b)	(b)	(b)	(b)	(b)	9.28	(b)	27,666	(b)	(b)	(b)	(b)	(b)	(b)	60,022	666,667	17.96	443	9,436,971	(b)	(b)	1.61	Kansas
Kentucky.....	11	142,185	661,676	6.90	(b)	(b)	(b)	(b)	(b)	12.67	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	14.99	23,701	664,677	6,430	664,677	.56	Kentucky
Louisiana.....	26	116,073	811,186	6.66	(b)	(b)	(b)	(b)	(b)	10.63	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	18.70	10,000	1,763,040	376,669	2,139,709	.43	Louisiana
Maine.....	39	56,644	663,011	6.66	(b)	(b)	(b)	(b)	(b)	10.64	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	1,436	67,940	40.68	2,466	1,666,169	277,654	2,112,733	.136	Maine
Maryland.....	15	304,338	1,667,771	6.91	(b)	(b)	(b)	(b)	(b)	16.60	(b)	3,316	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	10.06	1,793,967	51,110	(b)	(b)	1.14	Maryland
Massachusetts.....	14	904,289	1,416,664	6.93	(b)	(b)	(b)	(b)	(b)	3.61	(b)	31,066	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	17.60	16,060	1,603,279	19,311	1,622,590	.66	Massachusetts
Michigan.....	18	906,663	1,776,602	5.70	6,929	61,614	18.13	1,474	14,166	16.07	(b)	314,066	(b)	(b)	4,360	97,717	(b)	(b)	(b)	(b)	12.60	(b)	664,677	(b)	(b)	.46	Michigan
Minnesota.....	23	166,666	666,666	5.66	(b)	(b)	(b)	(b)	(b)	16.07	(b)	41,776	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	16.37	1,900	831,768	19,311	851,060	.56	Minnesota
Mississippi.....	29	121,107	801,420	6.66	(b)	(b)	(b)	(b)	(b)	11.94	(b)	9,600	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	30.00	(b)	290,706	(b)	(b)	.69	Mississippi
Missouri.....	7	257,962	1,610,304	7.04	67,414	186,700	6.40	1,061	12,649	16.66	30,666	64,066	1,906,666	(b)	(b)	97,717	(b)	(b)	70,601	1,324,366	16.37	470,666	6,638,776	69,600	7,329,382	.418	Missouri
Montana.....	66	24,436	803,666	8.80	(b)	(b)	(b)	(b)	(b)	20.00	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	1,008	46,064	44.68	6,000	297,369	(b)	(b)	.16	Montana
Nebraska.....	67	116,601	836,702	6.99	(b)	(b)	(b)	(b)	(b)	18.96	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	30.00	(b)	290,706	(b)	(b)	.69	Nebraska
New Hampshire.....	31	96,770	716,001	7.48	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	96.00	726,061	(b)	(b)	726,061	.46	New Hampshire
New Jersey.....	8	413,966	2,610,666	6.69	(b)	(b)	(b)	(b)	(b)	12.46	1,961	36,609	(b)	(b)	1,662,022	1,996,233	(b)	(b)	69,416	264,061	94.91	256,722	10,076,611	7,262,666	17,662,966	10.76	New Jersey
New Mexico.....	44	16,416	116,161	7.01	(b)	(b)	(b)	(b)	(b)	12.46	(b)	153,237	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	63.21	233,411	19,006,660	1,866,647	16,676,907	.09	New Mexico
New York.....	4	1,535,676	6,906,681	6.00	10,767	133,966	15.20	66,666	361,624	14.66	(b)	153,237	(b)	(b)	76,661	36,426	101,316	161,906	13,606	461,766	63.21	233,411	19,006,660	1,866,647	16,676,907	.642	New York
North Carolina.....	26	166,336	1,041,076	6.28	(b)	(b)	(b)	(b)	(b)	11.46	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	17.91	1,170,666	11,770	(b)	(b)	.73	North Carolina
North Dakota.....	41	96,979	904,166	7.86	(b)	(b)	(b)	(b)	(b)	11.46	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	(b)	31.66	266,676	(b)	(b)	(b)	.17	North Dakota
Ohio.....	1	650,432	6,943,167	6.89	906,976	1,966,360	9.66	90,610	1,096,690	11.66	26,216	1,620,746	6,667,360	(b)	766,176	366,642	1,653,410	110,600	106,676	1,671							

SURFACE WATER SUPPLY OF THE UNITED STATES

The water supply of the United States is of more importance to the life and pursuits of the people than any other natural resource. In the arid states the limit of agricultural development is determined by the amount of water available for irrigation, while in all parts of the country the increase in the population of cities and towns makes necessary additional water supplies for domestic and industrial uses, in procuring which both the quantity and quality of the water that may be obtained must be considered. The location of manufacturing plants may depend largely on the water-power facilities and on the character of the water. The notable advances made in the electric transmission of power have led to the utilization of water powers for the operation of manufacturing establishments, railroads and municipal lighting plants, many of which are at some distance from the places at which the power is developed.

The intelligent establishment and maintenance of enterprises of industries that depend on the use of water demands a thorough knowledge of the flow of the streams and an understanding of the conditions affecting that flow. This knowledge should be based on data showing both the total flow and the distribution of the flow throughout the year, in order that normal fluctuations may be provided for. As the flow of a stream is variable from year to year, estimates of future flow can be made only from a study of observations covering several years.

The rapid increase in the development of the water resources of the United States has caused a great demand by engineers for information in regard to the flow of streams as it is now generally realized that the failure of many large power, irrigation and other projects has been due to the fact that plans were made without sufficient trustworthy information in respect to the water supply.

Owing to the broad scope of these investigations and the length of time they should cover in order that the records may be of greatest value, it is in general impossible for private individuals to collect the necessary data, and as many of the streams traverse more than one state, this work does not properly fall within the province of the state authorities. The United States Geological Survey has therefore, by means of specific appropriations by Congress, for several years made systematic studies of stream flow, with a view to determining ultimately all the important features pertaining to the flow of the principal streams of the country. In carrying on this work stations are established on the streams and maintained for a period long enough to show their regimen or general behavior. When a record that is sufficient for this purpose has been obtained for any stream, the work on that stream is discontinued. The order in which the streams are measured is determined by the degree of their importance.

In 1906 the regimen of flow was studied at about 700 stations distributed along various rivers, and data in regard to precipitation, evaporation, water power, and river profiles were collected in many sections of the country. These data have been assembled by drainage areas and will be published in a series of fourteen Water-Supply and Irriga-

tion Papers, each of which will relate to the surface water resources of a group of adjacent areas. In these papers are embodied not only the data collected at the stations, but also the results of computations based on these data and other information that has a direct bearing on the subject, such as descriptions of the basins and the streams draining them, utility of the water resources, etc. The papers are numbered 201 to 214 inclusive, and the six listed below are now ready for distribution:

201. Surface water supply of New England, 1906. (Atlantic Coast of New England Drainage.) H. K. Barrows, district hydrographer. Includes data relating to the St. John, St. Croix, Machias, Penobscot, Kenebec, Androscoggin, Presumpscot, Saco, Merrimac, Blackstone, Connecticut and Housatonic drainage basins.
202. Surface water supply of Hudson, Passaic, Raritan, and Delaware River drainages, 1906. H. K. Barrows and N. C. Grover, district hydrographers.
203. Surface water supply of Middle Atlantic States, 1906. (Susquehanna, Gunpowder, Patapsco, Potomac, James, Roanoke, and Yadkin River drainages.) N. C. Grover, district hydrographer.
204. Surface water supply of Southern Atlantic and Eastern Gulf States, 1906. (Santee, Savannah, Ogeechee, and Altamaha Rivers and Eastern Gulf of Mexico drainages.) M. R. Hall, district hydrographer.
205. Surface water supply of Ohio and lower eastern Mississippi River drainages, 1906. M. R. Hall, N. C. Grover and A. H. Horton, district hydrographers.
206. Surface water supply of Great Lakes and St. Lawrence River drainages, 1906. H. K. Barrows and A. H. Horton, district hydrographers.

Other papers of this series will be published within a few months. Copies of these papers will be furnished without charge to those applying to the Director of the Geological Survey at Washington, D. C.

ELI ZIEGLER, INVENTOR OF CONTRIVANCE TO BUMP BRICK FROM MOULDS

Eli Ziegler, the ex-county commissioner, now a resident of Stewartstown, Pa., where he conducts a brick plant, has apparently landed on "Easy Street" by keeping his eyes open. He has invented a contrivance to "bump" green brick loose from the moulds. Yesterday he installed one at the plant of John Kissinger & Bro. of York, Pa., and it is said that the contrivance will revolutionize the brick making business. Mr. Kissinger said that every brickmaker in the United States would have to have one, and would have one without a doubt. Mr. Ziegler has applied for a patent.

Heretofore brick have been bumped loose from the moulds by hands. It required men of brains and with plenty of muscle, and then they would not hold on to the job for any length of time. Mr. Ziegler had so much trouble keeping a man for the job that he set to work and after many failures succeeded.

By Mr. Ziegler's patent one boy can do what two men formerly done and he can do it better.

WAGES OF POTTERS ADJUSTED FOR TWO YEARS MORE

Representatives of the National Brotherhood of Operative Potters of the United States, together with a special committee from the United States Pottery Manufacturers' association, met Aug. 24, in the Hotel Astor at New York, and after a long session reaffirmed the wage agreement which expires October 1, 1907, for two more years. Many of the twenty-eight new demands made by the union on the manufacturers were compromised or arranged in a way satisfactory to all.

The manufacturers were almost a unit in declaring that these demands are so radical that it was impossible to meet them, and the general feeling in the trade was of anxiety lest there should be a repetition of the disastrous shut-down of 1894, the effects of which are still felt in Eastern pottery centers. The direct effect of the strike of 1894 was to drive much of the general ware trade to the West, where the bulk of it has remained.

The potters are working under a wage agreement made two years ago which expires on Oct. 1. The purpose of the New York conference was to make a new agreement which the operatives are unwilling to do upon the old terms. They notified the employers of their demands, the principal claim being for wages in which the increase asked ranges from 10 to 50 per cent. The larger increases are only for a few special articles, the average being between 15 and 20 per cent.

There was also a demand by the seggar-makers that the employers stand the cost of preparing the clay, which is equivalent to about 10 per cent increase in wages. Another was that the so-called "C. C." list be eliminated and white granite prices paid for everything. This would also mean a substantial increase in the wages. The packers presented their grievances, too, demanding that heat be installed in the packing sheds, and that all returned packages be placed under cover instead of being exposed to the elements, as is generally the case.

The manufacturers say that under present trade conditions granting of the demands was out of the question. They say it would add to the operating cost of a factory about \$1,000 a year for each kiln, an expenditure not warranted by the prices received for the product. The American public, they say, seems disposed to pay just so much and no more for pottery made in this country. Foreign competition is spirited, and the moment they ask prices beyond what the trade thinks American pottery is worth, the foreign goods are selected. The foreign competition promises to be even keener in the future, too, they argue, because of the new tariff agreement with Germany and the relaxation of official vigilance in the matter of French goods.

When the conference first opened there were twenty-eight propositions in dispute, and late Wednesday night it looked as if the whole proceedings would end abruptly and without any settlement being reached. Both sides, however, got together and remained behind closed doors until early Thursday morning.

After a long argument the scale was compromised and the second proposition relating to the scale of wages to be paid to the kiln men or burners who prepare and bake the pottery was taken up.

This proposition was also adjusted in a manner to please both sides. With these two propositions out of the way the scale of wages for the next two years in the pottery world was taken up, and after a few minor changes were made the scale was affirmed for two years more and the conference then adjourned.

JOSEPH STAFFORD

Joseph Stafford, who died at St. John's Hospital Saturday evening, September 7, aged 82 years, was a man who left the impress of his personality upon the community in more ways than one. He was a native of Sangamon County, Ill., of which his family were among the earliest settlers, and was born in Rochester, where his parents, Oliver and Polly Sattley Stafford, arrived in 1825. The Stafford family have a long and honorable record in the county as well as in the nation where they were ante-revolutionary settlers.

Joseph Stafford is probably best remembered for his discovery of shale as a material for making brick and his efforts to introduce the manufacture of shale brick. He began this work some years ago while residing at Galesburg and afterward came to Springfield and made investigations which resulted in the discovery of immense and valuable beds of shale in this vicinity which have since been utilized in the manufacture of paving brick, building up a new and profitable industry for Springfield. Mr. Stafford was an enthusiast on the subject of brick, tile and pottery and had a fund of valuable information on the subject. He was a thorough expert in the matter of locating deposits of raw material.

His spirit was of the pioneer at all times and his stories of early times in Sangamon county were always full of interest. The most exciting period of his life, however, was when as a mere boy of twenty, he joined a party of "forty-niners" and went across the plains to Oregon and California in the days of the gold fever, a journey which was full of adventures with hostile Indians and hairbreadth escapes from fierce wild beasts. Mr. Stafford loved to dwell upon these experiences and some time ago a very interesting sketch of his trip across the plains, compiled from his own narration, appeared in *The News*. At the time he was taken ill, Mr. Stafford was preparing for this paper other stories that were leaves taken from his frontier experiences. He had been in failing health for some time, but always had a pleasant greeting for his friends, especially those of the younger generation, to whom in his lonely old age he turned for companionship. Since the death of his second wife, Mr. Stafford has continued to reside in Springfield, keeping, however, in constant communication with his sons, Burt and Frank, who reside at Galesburg. His first wife was Mytilene Ann Bowling and the two sons mentioned were their only children.

Mr. Stafford was a man of sterling character and was for many years a regular attendant upon the services of the Presbyterian Church.

The funeral took place from the undertaking parlors of Metcalf & Branson, at Sixth Street and Capitol Avenue, at 3 o'clock this afternoon. The Rev. J. B. Rogers of the Baptist church officiated and the interment was made in Oak Ridge cemetery.

The pallbearers were: J. W. Jefferson, A. L. Converse, I. R. Diller and Lincoln DuBois.—*Springfield News*.

NEW MANAGEMENT FOR THE HORTON MFG. CO.

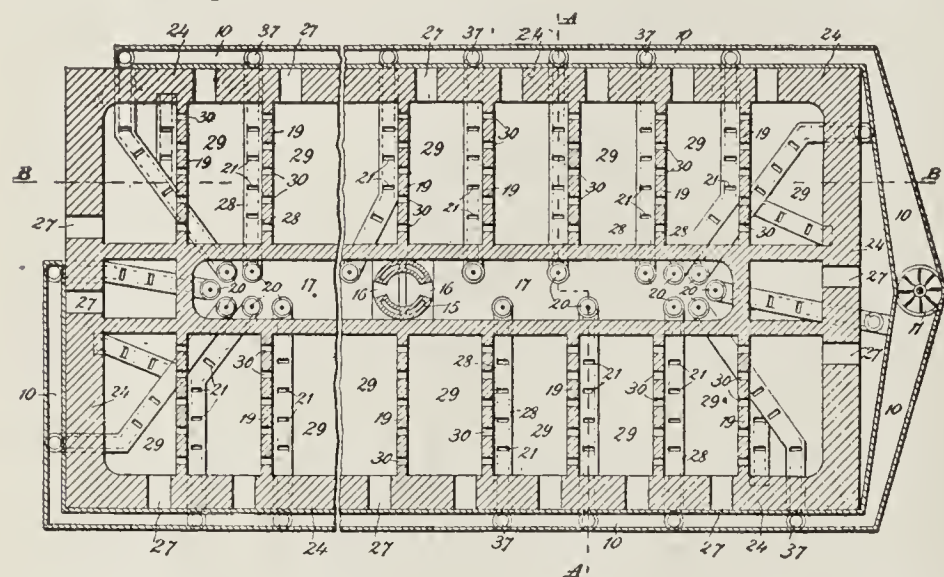
The controlling interest of the Horton Mfg. Co., of Painesville, Ohio, manufacturers of the "Hercules" and other standard types of brick making machinery, has been sold to Herbert W. Cole, who has assumed the general management of the business. The character and quality of the machines manufactured by the company will be improved in every possible way, and we are advised that they solicit the business of every brick maker in the United States, who is desirous of improving the quality and the amount of his output.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

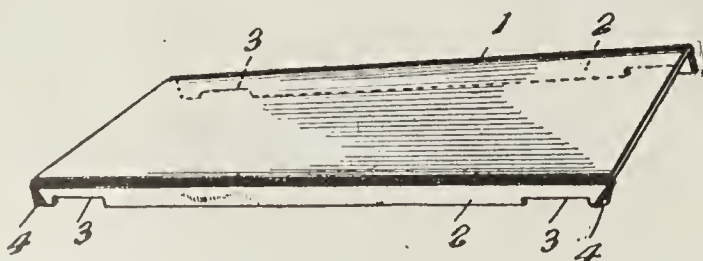
857,702. Brick-Kiln. Henry J. Williams, Spokane, Wash. Filed Jan. 20, 1907. Serial No. 354,634.

Claim—In a kiln for burning, drying and cooling brick or other articles of earthenware manufacture, the combination of a number of units or apartments as receptacles for the articles to be treated, arranged side by side around an inner air chamber separated by a wall from such units or apartments, openings in the partitions between the units or apartments for the passage of atmosphere, a continuous air chamber around the outer lower surface of the kiln communicating with a fan and with an air chamber underneath and connected by openings to each unit of apartment, such air chamber underneath the separate units communicating also with a centrally disposed inner air chamber in which is placed a flue with openings from such flue to such inner chamber,



a continuous air chamber around the outer upper surface of the kiln and also the inner upper surface of the different units or apartments, each communicating with the said units, an air chamber between the arch of each unit or apartment and the upper or finishing wall of the kiln, openings or apertures extending through the upper or finishing wall of the kiln and through the arches of the different units or apartments into the open space or chambers of such units or apartments, all air chambers and passages leading to the separate units or apartments provided with valves for the opening and closing of the same, each unit or apartment having an opening from the outer surface of the kiln as means of ingress and egress for materials to be treated, substantially as set forth.

859,377. Tile-Machine. George Ferguson, Waterloo, Iowa. Filed Feb. 8, 1907. Serial No. 356,332.



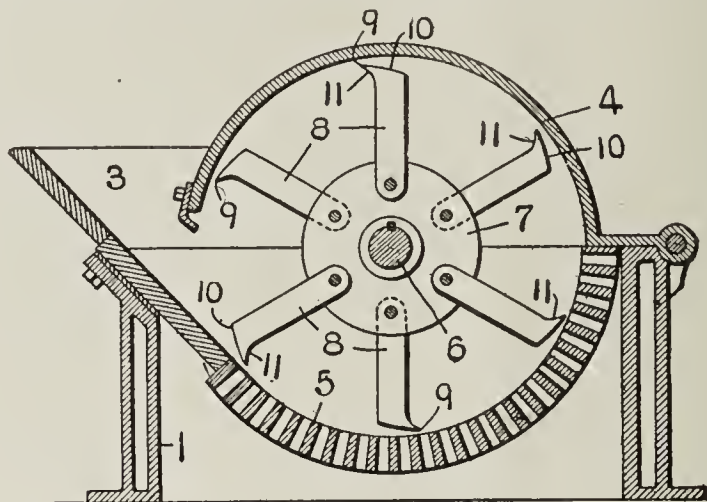
A brick pallet having downwardly extended side flanges formed with recesses for engaging the frame of a car, and wings extending laterally at opposite ends of the pallet.

A brick pallet having downwardly extending side flanges formed with recesses for engaging the frame of a car, the extreme ends of said flanges being bent outwardly to form wings.

858,772. Hammer for Crushers and Pulverizers. Milton F. Williams, St. Louis, Mo., assignor to Williams Patent

Crusher & Pulverizer Company, St. Louis, Mo., a corporation of Missouri. Filed Sept. 18, 1905. Serial No. 278,967.

In a crusher and pulverizer, the combination of a casing having a grinding surface, a cover and a hopper, a rotatable hammer support, hammer upon said support of a substantially rectangular shape having its front and rear edges straight and parallel approximately throughout its length, the end of said hammer being inclined at an obtuse angle to the rear edge thereof, and terminating in a point from which a throat curves downward to meet the front edge of the



hammer, the said inclined end forming an elongated surface coacting with said grinding surface whereby the hammer may be worn down and still retain its pointed shape.

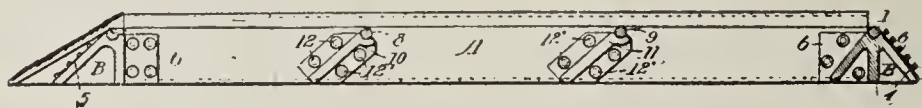
855,136. Fireproof Material. Keizo Sakurai, San Francisco, Cal., assignor of one-third to Gustav Abrahamson, San Francisco, Cal. Filed Dec. 1, 1905. Serial No. 289,869.

Claim—As a new article of manufacture, a fireproof building material consisting of a vehicle characterized as having a specific gravity of approximately .6 and being relatively rich in silicon oxid and capable of being reduced to a fine non-gritty powder, and a suitable binder.

As a new article of manufacture, a fireproof material consisting of a vehicle characterized by having a specific gravity of approximately .6 and containing approximately 50 per cent of silicon oxid and containing not to exceed approximately 30 per cent of aluminium oxid, and a suitable binder, said vehicle and binder mingled in approximately the proportions of ten-parts of the vehicle to four-parts of the binder, said binder consisting of a mixture of clay and dead-burnt-gypsum.

858,706. Screen. William R. Cunningham, Bucyrus, Ohio, assignor to the American Clay Machinery Co., Bucyrus, Ohio, a corporation. Filed April 13, 1907. Serial No. 368,115.

An improved screen consisting of a frame having parallel sides, and parallel ends, said ends being formed of members angular in cross-section and having end flanges by which they are bolted to said sides, one of said end members having an inclined wall provided with pins and the other member

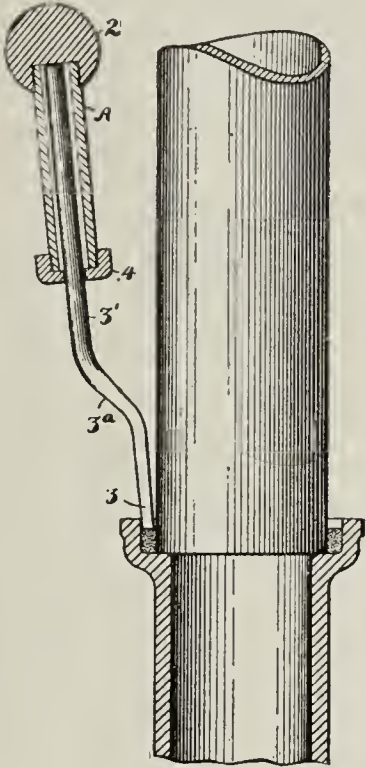


having an inclined wall provided with turning-pins, rods or bars fixed to the sides of the frame and extending longitudinally along the upper portions of the end-members, said rods or bars being provided with screw-threads, wires strung between the pins at the opposite ends of the frame, and seating in and being spaced by the threads of the rods or bars, distance-pieces intermediate of the end-members and bolted to the sides of the frame, and rods or bars fixed in the sides of the frame and extending long the distance-pieces, and having threads across which the wires extend and in which they are seated and their intermediate portions held in spaced relation.

858,938. Calking-Tool. Theodore G. Ames, Elmhurst, Cal. Filed Aug. 28, 1906. Serial No. 332,371.

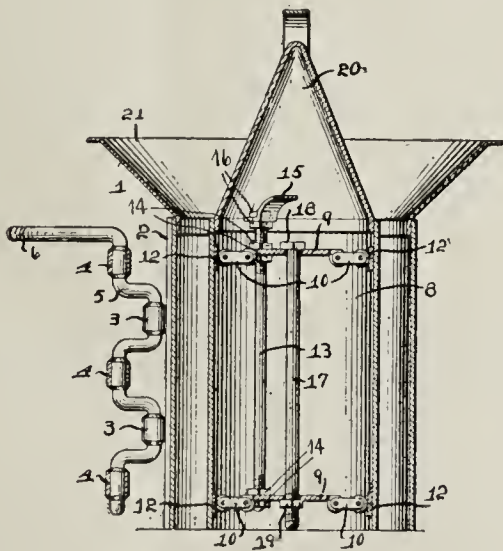
An improved calking tool consisting of a bit and a readily removable handle therefor, provided with a weight, said bit comprising a shank portion and a calking portion, and said handle portion having a bottom opening normally of a size which adapts the handle to be readily slipped over the shank, and removed therefrom.

A calking tool comprising a hollow-tubular-weighted handle at one end, a removable perforated-cap fitting the other end, and a removable point loosely fitting said perforation and handle and having a stem whose diameter does not exceed that of said perforation, whereby said stem is freely removable from the handle without disturbing said cap.



858,638. Tile-Mold. John J. Swenson, Roswell, N. Mex. Ter. Filed Sept. 17, 1906. Serial No. 334,909.

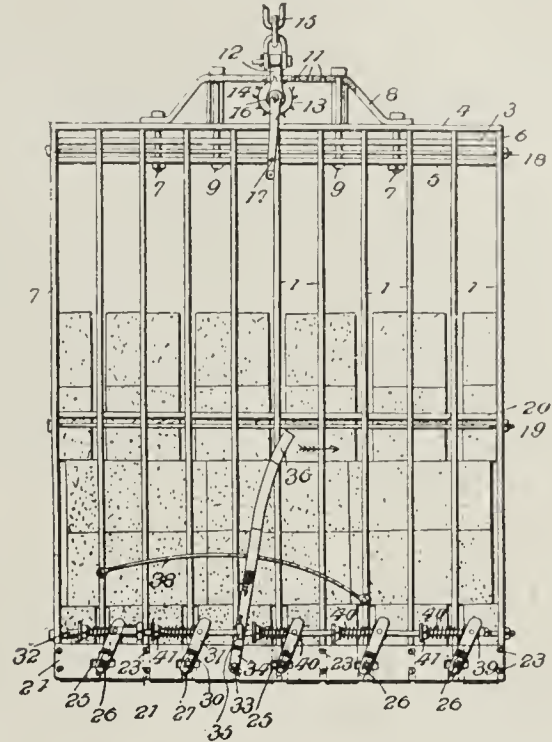
In a tile mold, an exterior shell, and a collapsible core, said core comprising a cylindrical sheet of metal, a bolt axially arranged therein having a nut adjustably mounted on its lower end, two disks loosely mounted on the bolt and rigidly spaced apart, toggles secured to the edges of the disks and to the interior of the core, and a handle at the upper end of the core.



In a tile mold, an exterior shell, and a collapsible core, said core comprising a cylindrical sheet of metal, a bolt axially arranged therein having a nut adjustably mounted on its lower end, two disks loosely mounted on the bolt, two tie rods through said disks having their ends screw threaded three pairs of nuts on each rod, two at the top and one at the bottom, two of said pairs engaging with said disks, and a handle upon the upper ends of said rods with its ends between the top pairs of nuts.

859,445. Brick-Handling Machine. William H. Francis, Cherryvale, Kans., assignor of one-half to Charles Francis, Independence, Kans. Filed Dec. 18, 1905. Renewed Dec. 11, 1906. Serial No. 347,360.

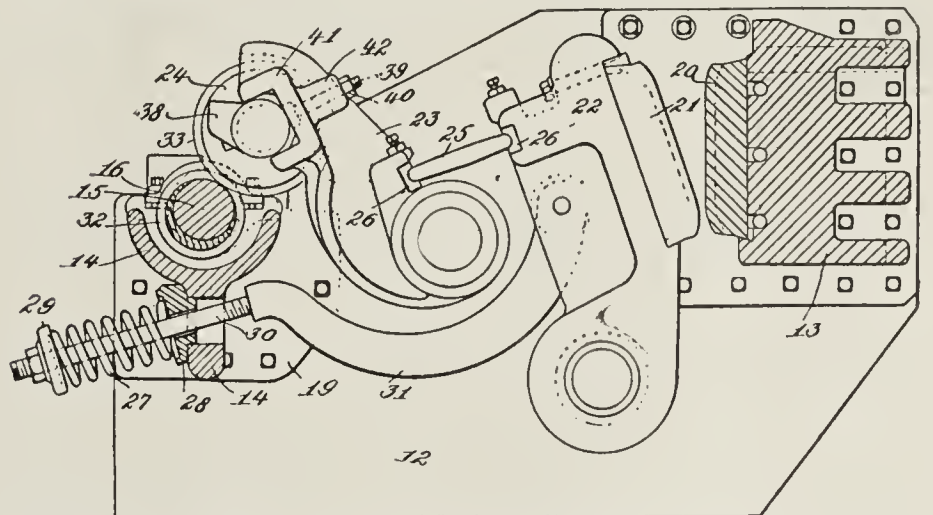
A machine of the character described, comprising a vertically disposed frame, laterally extending arms carried by the upper end of said frame, supporting means carried by the outer end of said arms, and laterally extending clamping jaws carried by the lower end of said frame.



A machine of the character described, comprising a vertically disposed frame, laterally extending arms carried by the lower end of said frame, gripping jaws linked to the outer end of said arms and having their inner ends journaled in elongated horizontal slots, operating arms carried by journals of said gripping jaws, an operating lever, and a spring connection between said lever and operating arms.

859,348. Crusher. Thomas L. Sturtevant, Quincy, and Thomas J. Sturtevant, Wellesly, Mass., assignors to Sturtevant Mill Company, Portland, Me., a corporation of Maine.

In a crushing machine, the combination with a frame comprising relatively thin side plates, a head block or front cross beam, and a rear cross beam separate from but secured to said side-plates and supported thereby above the bottoms



thereof, of a driving shaft the bearings of which are supported by said rear cross beam whereby said relatively thin side plates are relieved from the direct strain of the driving shaft, a cam or eccentric carried by said shaft, a stationary crushing plate, a crushing lever pivoted at its lower part to said side plates, a crushing plate mounted on said lever, an operating lever having a roller bearing against said cam or eccentric, a thrust plate or toggle interposed between said operating lever and the upper part of the said crushing lever, and a spring and suitable connections for retracting said crushing lever and for holding said bearing-roller in contact with said cam or eccentric.

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Vol. XXXI.

SEPTEMBER 14, 1907.

No. 5

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products Manufacturers will be held at Ottawa, Canada, November 19, 20 and 21, 1907.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

Success is the magic word that leads to victory.

A wise man is he who always knows exactly what should be done next, and then quickly does it.

It is not the man who says the loudest Amen who makes the most impression on heaven.

Subscribe for the Clay Record today—tomorrow never comes. It is the only clay journal in America that is printed twice a month. Its cost is nominal—only one dollar for twenty-four issues or one long year. Your money returned if you don't get its worth three-fold.

Advertise in the Clay Record. A few dollars spent wisely there may bring you good returns. The only way to know this is to try it. Do it now.

Will power is the electricity which gives the impulse to every thing we do, great and small. The more of it we use, the more it generates for further use.

BRICK PAVEMENTS PROMOTE THE GROWTH OF SMALL CITIES

That brick pavements promote the growth of the smaller cities by improving the appearance and usefulness of the streets and inciting the property owners to improve the appearances of their houses, etc., lawns and walks and thus making them more attractive is the claim of an article in Municipal Engineering Magazine about the pavements of Paris, Ill.

Paris is one of the richest agricultural regions in the country and its interests are almost entirely agricultural. The appeal which its character and conditions makes to the retiring farmers and to those moving in the city to educate their children is strong, and what the city spends in municipal improvements is conceded by all its public-spirited citizens to be money well invested.

During the past seven years this little city of about 6,500 people has spent from \$15,000 to \$48,000 a year for new brick streets, with a total of \$189,534, and this year will spend about \$70,000 more. These pavements cost an average of \$1.75 a square yard, including all items of construction or a trifle over \$30,000 a mile. This is equivalent to \$5.80 a foot of length of a street 30 feet wide which is the average width in Paris.

Municipal Engineering says that an inspection of the brick streets of Paris made for that magazine shows that they are uniformly of the highest grade and can well be studied by other cities as examples of the excellent results obtained by using the best methods of construction. There is no visible reason why they should not retain their present condition for generations even if there is a material increase in travel over them. On streets with light travel the wear is inappreciable and there is no appreciable deterioration from other causes. This permanence is one of the strong arguments in favor of brick pavements particularly in small cities.

PLANT OF THE STANDARD BRICK AND TILE COMPANY OF NEW GLASGOW, N. S., BURNED

Fire destroyed the entire plant of the Standard Brick and Tile Company causing a loss estimated at \$300,000, and throwing 100 men out of employment. The fire started in the "pottery" and swept through the entire plant, carrying down building after building, the burning tar and oil illuminating the surrounding country for miles. Several freight cars and half a dozen coal hoppers on the railroad siding were also destroyed.

The buildings were valued at \$150,000 and the machinery at the same amount.

OBITUARY

Thomas W. Stevenson, aged 64 years, died at East Liverpool, Ohio. He was a resident of the pottery town for 27 years and foreman of the R. Thomas, & Sons plant.

William H. Wensel, age 50 years, died at his residence in 209 Dinwiddle St., Pittsburg, Pa. He was engaged in the brick making business under the name of Wensel & Brothers for many years.

Julius Belknap, the senior member of the firm of Belknap & Phillips, manufacturers of brick, at St. Clair, Mich., is dead. He was born in 1834 and came to St. Clair in 1851. He was in the brick making business since 1871.

Joseph Stafford, age 82 years, died at the St. John's Hospital at Springfield, Ill. It is claimed that he is the discoverer of shale for making paving brick. He was well known to the older clayworkers of the state of Illinois.

John C. McNichol, for many years connected with the pottery business at East Liverpool, Ohio, is dead. He was 43 years of age. Five John McNichol's, all of the same family, died in the same house, within the past fifty-eight years.

FIRE! FIRE! FIRE!

The buildings and machinery of the Fairview Brick Company were destroyed by fire, causing a loss of \$15,000.

Fire caused by sparks from an engine totally destroyed the stables of the Bromilaw Brick Co., Alexandria, Va.

The main building of the Enid (Okla.) Vitrified Brick Co. was totally destroyed by fire. Partly covered by insurance.

Fire broke out in the main building of the Mt. Gilead (O.) Pottery Works and the interior of the building was entirely burned out.

A small fire occurred at the brick works of the Geo. F. Weaver's Sons Company at Utica, N. Y. The loss is fully covered by insurance.

The brickyard of J. E. Whitesides, Corsicana, Texas, suffered a loss by fire. Same is covered by insurance and will be repaired at once.

Fire caused a damage to the extent of \$1,000 in the engine room of the Kyle Rock Co's. brick yard on Vine St., Kansas City, Mo., cause is not known.

Fire destroyed the entire plant of the Standard Brick & Tile Co., New Glasgow, N. S., causing a loss of \$300,000, and throwing 100 men out of employment. The plant is partly covered by insurance.

The plant of the Valley City Brick Co., Grand Rapids, Mich., was damaged to the extent of \$15,000 by fire. The fire originated in the kiln. H. D. Brown, president of the company, states the plant will be in operation again in a few days. Insurance, \$5,000.

BRICKS, LIME AND CEMENT IN NEW YORK

Demand for all grades of brick continues heavy, and under the small shipments of Hudson River brick from the manufacturing section, prices on this grade are still firmly maintained on the basis of \$6.75@7.25 for common, and, although some small lots have been disposed of at \$6.50, shading of quoted prices is exceptional. It is not expected that the market will show a decline for the year. Demand for all grades of cement continues of only fair proportions, with prices firmly maintained at unchanged quotations.

ACCIDENTS, DAMAGES AND LOSSES

John Gordon, seven years old, is suing the Boone (Ia.) Brick, Tile & Paving Co. for \$20,000 damages for injuries received by him.

The caving in of the clay bank at the Phoenix Brick & Construction Co's. plant at St. Joseph, Mo., badly bruised a workman named Bimstey.

Perry Moon, age 60 years, was buried beneath a clay bank at the Hartford Brick & Tile Co's. plant in Hartford City, Ind., and was instantly killed.

The Star Brick Co., Iola, Kansas, has been sued for \$5,000 damages for alleged injuries to Fred Kinser, who got his hand caught in a pug mill.

A damage suit has been filed against the Hamilton (O.) Brick Co. for \$15,000 for the death of D. S. Carroll, alleged to have been killed at the plant of the company.

The premature discharge of powder in the pit of the Metropolitan Paving Brick Co's. plant, Canton, O., seriously injured one man and imperiled the lives of four others.

The New England Brick Co. suffered a \$4,000 damage at its Troy, N. Y., plant by a heavy rain which backed water into the filled kilns and into those that were being burned.

L. A. Hill, a blacksmith, is at the hospital in Iola, Kansas, in a critical condition on account of wounds received by an explosion of a dynamite cap at the Portland Cement works.

Henry Whiles, former foreman of the Renova (Pa.) Fire Clay Works, was so injured by an explosion in the clay-mines that he died three hours after and another miner is in a serious condition.

Judge Endlich granted a rule to make service in the equity suit of Frank Richards against the United States Brick Co., asking for a receiver within 15 days and for them to file answer within 30 days.

The Rookwood Pottery Co., Cincinnati Ohio, has brought suit against the Carnegie Educational Institution of Pittsburg to recover \$2,300 due for material furnished for the construction of the buildings.

Creditors of the McNeil Pressed Brick Co., Newbern, Ill., have filed a petition in the United States Court alleging that the company is insolvent and asking that it be adjudged bankrupt and a receiver appointed.

BURNING SAWDUST PROVES SUCCESSFUL IN MAKING BRICK

The Intermountain Building Material Supply company is a Boise, Idaho, manufacturing corporation which is entirely independent of the coal dealers as they have their plant arranged so they are burning sawdust and are now turning out an average of 18,000 brick per day.

Mr. Koelsch stated that they had been burning sawdust for some time as an experiment and it had proven so successful that the plant would close in order to make necessary improvements for its use during the entire winter and they would be able to turn out several million of brick, which are already ordered in spite of a scarcity of coal.

This company is furnishing brick for the capitol building, the new Carnegie library at Nampa, the bank building at Vale and several others and has enough brick ordered to run the plant during the entire winter.

CLAY RECORD ALWAYS GLAD TO MAKE CORRECTIONS

EDITOR OF CLAY RECORD:

In your issue of Aug. 30th, there appears on page 29 an article which reflects on the credit of the Malvern Clay Co., of Malvern, Ohio, and the Collinwood Shale Brick Co., now The Collinwood-Deckman-Duty Co., of Collinwood, Ohio, with offices at rooms 854-856 Rose Bldg., Cleveland, Ohio. So far as this article is concerned in reference to the above-named companies, it is absolutely false, and there are no grounds for the statement made therein whatsoever. Each of the above companies referred to have shipped to the Department of Public Works, under Com. Haarer's supervision and instruction, more block than we contracted to ship during this season, and we are still shipping block in excess of the quantity so contracted, in order to relieve a stringent situation, and possibly help out other manufacturers. In justice to ourselves, we think that a correction in your next issue as to this statement would be due us.

THE COLLINWOOD-DECKMAN-DUTY CO.

By Chas. J. Deckman.

EDITOR—Since receiving the above letter we have a copy of a letter from Commissioner Haarer of Detroit, coinciding with the above letter and stating "That the quality of the paving shipped to Detroit this year has been excellent, better than ever before, referring to the brick of all the companies with whom the city has contracts, and the companies are filling their contracts at my request." The article referred to was taken from a Detroit daily press paper.

TOWN OF SEBRING HAS "GONE BROKE"

Although the village of Sebring, Ohio, has a population of 3,000, and is noted as a pottery manufacturing center, it is in dire financial straits. The village council has had no meeting for several weeks, and, as Councilman Schewell expresses it, "there is no telling when there will be a meeting. We haven't a single dollar with which to pay bills, so there is no use of meeting."

The town was laid out eight years ago by five brothers named Sebring, who now conduct potteries, employing 1,500 men and women. It has paved streets and municipal water and light plants. When the village was laid out and lots were sold there was a clause in every deed that no liquor should be sold on the premises. Therefore it has never had a saloon, and as the tax has been low the village has been unable to meet its bills.

MR. ABBE RETURNS FROM EUROPE

Mr. Max F. Abbe, president of the Abbe Engineering Co., N. Y., has just returned after a five months' trip to Europe. He visited England, Belgium, France and Germany. In several of the countries he made contracts for the manufacture of his Tube Mills and Linings under various patents that he owns. In Germany he made a contract with the Fried. Krupp Aktiengesellschaft Grusonwerk, at Madgeburg-Buckau, for the building in the United States of their celebrated Excelsior Mills, of which the Krupp people have sold 30,000 in various parts of the world. The Abbe Engineering Co. will be ready within a month to supply the trade with mills of this type.

DENY BRICK SHORTAGE AT SPOKANE

Failure to receive brick and other building materials has resulted lately in delaying the construction of some of the buildings now in process of construction in Spokane, Wash. Information obtained from the Idaho Brick and Lime company and from the Washington Brick, Lime and Manufacturing company indicates that the difficulty has lain with the railway companies to a large extent, and is not chargeable to any lack of material at shipping points.

J. Evans of the Idaho company said:

"We are not short on brick. While there is an increase over last year's demand of 35 per cent, we have been able to meet all demands and now have on hand at Mead and Albany Falls 2,000,000 brick. For a time in June we were short, but since that we have been able to keep up with the contractors. We are centering our chief efforts on the work going on within the city, as it is there the greater demand exists. Outside points are asking for no more material than last year."

J. H. Spear of the Washington Brick, Lime and Manufacturing company in speaking of the delay said:

"There is no shortage in brick. At Clayton and Free-water we have 300 carloads ready to ship if we could get the cars. While there has been no serious delay in buildings for which we are furnishing materials, a slight shortage has kept them back, within the last few days. It is difficult to get cars for the companies are now strictly enforcing their rule of not allowing their cars to leave their own tracks, and we have been forced to wait for transportation a great deal this summer. In bringing brick down from Clayton we have even been compelled to load a car there and transfer the material to other cars at our own expense here in Spokane, because the company refused to let the car off its own rails."

DEMAND FOR BRICK IN MONTANA GOOD

The demand for brick from all parts of northern Montana during the past six months has been so great that it is almost impossible for the brick yards to supply it. Coombs & King, the Great Falls brick firm, are literally swamped with orders, which are pouring in every day.

Among the orders which have been received by this firm within the past few days are the following: Three hundred and fifty thousand brick for Smith Bros. & Hill, who have the contract for extending the Great Northern roundhouse and machine shops at Havre: 125,000 for Ed. Wineguard, who holds the contract for building the city hall at Havre, 75,000 for George Hanks, for building purposes at Havre, and 125,000 for the new Bell telephone building at Great Falls.

REPORTS MISLEADING TO STOCKHOLDERS

President C. D. B. Howell of the Illinois Brick Company takes strong exception to the various reports circulated about earnings of that concern. He declares they are entirely misleading to stockholders, and that the only official report is made at the annual meeting once each year. The company has had, and is now doing, a very satisfactory business, but the earnings have been exaggerated.

BRICK MANUFACTURE IS BIG INDUSTRY AT PORTLAND

The output of the brick kilns of Portland, Oregon, and vicinity amounts to about 440,000 per day. The factories are in operation usually during the months of May, June, July, August and a part of September. The pressed brick, or facing brick, are nearly all from the Pacific Face Brick company, which was formerly the Newberg Brick company. This is the only plant of the kind making a specialty of pressed brick for this market. The output of this factory for 1907 will be about two and a half millions of pressed and stiff clay brick.

This gives one some idea of the amount of brick used in the construction of Portland's buildings. The number of of facing brick used in a building is not so great as one might suppose, as they are only used as a veneer, or face, the balance of the wall being constructed of the common red brick. The walls of the new Wells-Fargo building contain only about 100,000 of stiff clay facing brick.

The cost of manufacture has materially increased, owing to the advance in the price of wood and labor. Wood is about \$1.50 per cord higher than last year. Laborers are paid from \$2.50 to \$4 per day of eight hours. It seems almost impossible to get men to cut wood at any price. Wood dealers say that it is not safe to bid on furnishing wood under contract for that reason.

Common brick is selling for \$10 per thousand, delivered. Pressed brick for \$42.

The following are the principal factories supplying the Portland market with the approximate thousands capacity daily: A. N. Wills, 40; St. Johns Brick company, 15 to 20; Western Clay Manufacturing company, 33; L. E. Kern, 40; James Anderson, 32; Peter Hobkirk, 20; Theodore Jensen, 20; Henry Heerdt, 20; A. Hoomisson, 15; McMahon Brothers, 25; Hoover, 20; Kalk & Son, 22; Estacada Brick & Tile company, 15; Randles & Kinsey, 30; Close Brick company, 32; and Frieberg Brothers, now building a factory on the Canyon road with a capacity of 40 thousand.

The Pacific Face Brick company now has its factory at Newberg, but will soon erect a new plant costing about \$150,000, at Willamina. A railroad is being built from Sheridan to their clay bank near Willamina, about seven miles from Sheridan. The output of this plant will be 40 thousand per day of dry and stiff clay face brick. This company has a special process used in the manufacture of its products. It may be interesting to know that the red clay used comes from Newberg, the white clay from Willamina, and the buff clay from Buena Vista. With these clays different shades of brick are made by varying the proportions.

The Diamond Brick company, office at foot of Ankeny street and works near Vancouver, have a capacity of 25,000 brick a day, but its main products are all kinds of sewer pipe, drain pipe, fire-proofing and terra cotta chimneys. The company employs 70 men.

15,000 PORCELAIN WORKERS LOCKED OUT THROUGH LABOR TROUBLES

Limoges, France—Owing to labor troubles the two big Haviland porcelain factories here have been closed, and 15,000 workmen are locked out.

CLAY BED NEAR PRAIRIE VIEW NORMAL IS BEING INVESTIGATED

It is highly probable that in the near future, or during the fore part of the present session of school, the manufacture of brick, both as a source of saving and revenue to the State and as a means of practical instruction to the students, will be adopted by the Prairie View, (Texas) Normal and Industrial College. The board of directors of the institution have the matter under consideration, and so far as they have gone in investigating the feasibility of the plan, regard it with favor. A few days since a committee having other business at the institution inspected a clay bed adjacent to the grounds which is said to be of an excellent quality for brick making, and as a result a number of samples were moulded, and sent to Houston for burning. When these are submitted to the board a definite decision in the matter will be reached. Shortly the erection of three new buildings will be begun at the school, in which brick will be used to a large extent, and in event of the proposed enterprise being established the saving in that connection alone will be no small item.

NEW BRICK PLANT AT WELLSTON WILL MAKE A NEW KIND OF FIRE BRICK

The Wellston, Ohio Sentinel says:

"For the past ten days a number of gentlemen have been in this city arranging and promoting the completion of an important new enterprise. A brief history of the matter is summed up in the following statement:

An English chemist, a former professor of chemistry in the University of Oxford, England, has discovered a process by which fire brick when chemically treated is rendered impervious to extreme degrees of heat. Tests, many of them, have been made and the preserved brick have withstood the remarkably high registration of 4,000 degrees. Fire brick when so treated may be used under all conditions, and in all places where usually required and will last many times longer than brick not so treated. The importance and saving of this is obvious. In fact, the discovery is one of the most valuable made in recent years. No special grade of brick is required, the common kind when treated with this process will make first grade brick. The process is simple but effective.

Judge J. L. White, of New York, represents the discoverer, and with Mr. B. F. Howland, also of New York, and E. B. Bingham, of Toledo, have been at the Wells hotel for the past ten days, and have been in negotiations with some of our citizens for the location of a plant here for the manufacture of the process. A contract has been closed under which a charter has been taken out under the laws of Ohio, and a corporation organized here.

The new corporation is to be known as the Ohio Fire Brick Company, with a capital stock of \$50,000.

The organization was effected by the election of W. B. Carrington, J. M. Partridge, J. M. James, E. B. Bingham, J. L. White and B. F. Holland as directors. W. B. Carrington was elected president and general manager. J. L. White was elected vice-president, J. M. Partridge was elected secretary and treasurer, and E. B. Bingham, general counsel."

MAKE BRICKS FROM THE NILE

Bucyrus, Ohio, Brick machines will be used in transforming clay from the banks of the river Nile into brick to be used in Egypt. Some time ago samples of the clay from the bed of the great Egyptian river was received in Bucyrus for testing to see if it were suitable for making into brick. The test was satisfactory and an order was placed by the people in Egypt for the necessary machinery to start a brick factory. The machinery has been shipped and in due time will be transforming clay from the Nile into building brick.

**RED WING CAPITALISTS SECURE CLAY LAND
NEAR FORT DODGE AND PREPARE TO
RUSH WORK**

Red Wing, (Minn.) capitalists have secured enough clay land near Fort Dodge, Iowa, to enable them to operate a large sewer pipe plant for a long term of years. It will be a rival to the Plymouth Clay Products company which is just completing its buildings in this city. The Red Wing people Plymouth Clay Products company of this city sent a quantity of clay to Red Wing to be burned and otherwise tested. They soon began a quiet investigation on their own account and are now thoroughly convinced of the quality and quantity of the raw material to be had and their purchase of clay land is the first step in what will be another large sewer pipe factory for this city.

The clay is secured below the gypsum rock taken out by the stucco mills and is a vein of ten feet. Its quality is unusually pure and there is no waste. Shortage of clay at Red Wing will have a tendency to rush their plans along so that next spring will witness activities along the building line. By that time the Plymouth Clay Products will be turning out sewer pipe and the plant of the Lehigh Brick & Sewer Pipe company recently organized will have their plant at Lehigh completed.

**STOCKTON TO HAVE BIG GLAZED BRICK
PLANT**

The second fire glaze and enamel brick plant west of the Mississippi River is nearing completion on the 10-acre tract of the Stockton, Cal., Fire and Enamel Brick Company, just outside of the city limits, and will go into active operation October 15. Heretofore contractors have had to go out of California to purchase glazed brick. The Stockton plant will make a speciality of this particular brick.

The company is organized and owned by Stockton capitalists. Two hundred thousand dollars is the sum invested, the plant is fully equipped and considered by experts to be modern in every respect.

It has a capacity of 30,000 brick daily and is situated near an abundant supply of high-grade clays. When running in full shift it will employ about 150 skilled men.

The superintendent of the company states that enough San Francisco contracts have been obtained to keep the plant in full operation night and day for four months. The scarcity of building material in central portions of the state will keep the plant busy for a year or more without touching local trade.

NEW MEN FOR ILLINOIS CERAMIC SCHOOL

Two new men have been engaged for the ceramics department University of Illinois at Champaign. Mr. Stull, expert in terra cotta work, comes to take charge of the work in Illinois. Herford Hope, expert in pottery, and a graduate of the Ohio State University, has also been added to the department. Both are men of considerable practical experience, the latter having been engaged in the practical work both in England and America.

DRIVER IS HURT IN MIX-UP WITH POLICE

R. Paschall, of Sixtieth and Kingsessing avenue, manager of the Lutten Brick Company, Philadelphia, Pa., clashed with the police authorities, and as a result it was necessary for him to be taken to a hospital.

Paschall, driving a carriage in which was \$1,600, which he had just drawn from bank for the purpose of paying off the brickyard company's employes, attempted to cross Juniper street at Market street during the parade of the Patriotic Order Sons of America, and in resisting arrest it is alleged that he struck two policemen with his whip, while he was injured in being dragged from his carriage.

After being taken a prisoner to police headquarters he collapsed, apparently from the injuries he received, and was taken to the Hahnemann Hospital, where his married daughter, Dr. Helen P. Proctor, of 3218 Dauphin street, who was summoned, assisted the hospital doctors in attending to him.

Paschall's horse and carriage and the money that was in the vehicle were taken charge of by the police. Paschall will be arranged today in the Central Police Court.

MAKES CEMENT BRICK BY POWER

Wilburn F. Conrad, 938 West Thirty-first street, Indianapolis, has patented and has in operation what he says is the only power machine for the making of cement brick. Although he has been working on the machine for three years this summer is the first time that a practical demonstration of its has been attempted. The machine is at Northwestern avenue and Poach street.

"With this machine we can make 30,000 brick a day, or 3,000 an hour, and the common grade of brick, made of one part cement to six parts sand, can be manufactured for \$3.50 per thousand, about \$2 cheaper than the same grade of clay brick," declared Conrad recently. "The finest grade of brick can be made at the same speed, and our labor costs us but 50 cents per thousand brick. The machine itself can be put on the market for \$3,000."

The machine for making the cement brick is similar in many ways to clay brick machines. The cement for the model machine is mixed in a revolving cylinder and carried to the hopper in buckets on an endless chain. From the hopper the cement drops down to a feed box and on down into the molds where the cement is pressed under 60,000 pounds pressure. The brick, six in a mold, are discharged from the molds on an off-bearing board in such a way as to prevent the "green" brick from cracking. After seven days' seasoning the brick are ready for building purposes.

"We have been demonstrating the machine under difficulties," said the inventor, "but we have managed to turn out ninety-five perfect brick out of every hundred. Heretofore cement brick have been made only by hand and this is the only power cement brick machine patented. From our demonstrations so far the machine is a success in every way."

SAND OR LIME BRICK OR BLOCK NEWS

D. H. Fitch of Elk Creek, Nebr., is putting in a plant for the manufacture of brick blocks.

The Bond Sandstone Brick Co., Lake Helen, Fla., is now turning out 30,000 sandstone brick daily. They use the Konimick system.

Bruno Kommick of Germany made a visit to Saginaw, Mich., where he is interested in the American Sandstone Brick Machinery Company.

The Birmingham (Ala.) Architectural Stone & Brick Co. has resumed operations after several weeks' shut-down on account of the illness of I. T. Houser.

The Webster City (Ia.) Cement Pipe & Tile Co. are erecting an addition to their factory 80x52 feet, so as to keep up with the demands for their goods.

The figures for 1906 of the Houston (Texas) White Brick Co., to the Secretary of State are: capital, \$125,000; output, 5,000,000 brick; employes, 40 workmen, with payroll of \$6,000.

The Sagniauw (Mich.) Sandstone Brick Company is making one-half million brick a month and shipping more than that a month at present. The factory is sending brick to all points in upper and lower Michigan.

The Falls River (Mass.) Brick & Concrete Company has been incorporated with \$40,000 capital stock. William Dacey is president, Francis M. Hunter, treasurer. Directors are the above, and Eugene Sullivan. The works will be located on Meridian Street, where five acres of land have already been purchased.

John R. Davis, West Nanticoke, Pa., contractor, will open up a brick yard on the west side near the Ry. station.

The manufacture of sand brick from the tailings of smelters is undergoing thorough tests at Anaconda, Montana.

Bricks are to be made of the borax tailings at Daggett, Cali., by the large Borax Company which operates on the Pacific coast.

E. A. Unthank, the well-known contractor, has been appointed general manager of the Cheyenne (Wyoming) Cement, Stone & Brick Co.

The Intermountain Building Material Supply Co., Boise, Idaho, are using sawdust instead of coal, oil or wood with which to operate their plant.

The Granite Brick Co.'s plant at Memphis, Tenn., has been transferred to Luverne, Minn., where the Luverne Pressed Brick Company is installing it.

The Spokane (Wash.) Plaster & Brick Co. has been incorporated with \$100,000 capital stock by C. W. Hadley, W. H. Orr, and J. B. Schrock.

The Minneapolis (Minn.) Sandstone Brick Co. will have a capacity of 40,000 sand-lime brick a day as soon as the factory is completed. Edward S. Kahn, George Markham and Theodore Dunn are stockholders.

The Medelia (Minn.) Cement Tile Co. has been incorporated with \$12,000 capital stock. Incorporators are: A. E. Whiting, E. L. Brown, Charles E. Brown, E. R. Cisney, E. L. Cole, C. T. Dahl, and J. E. Haycroft.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

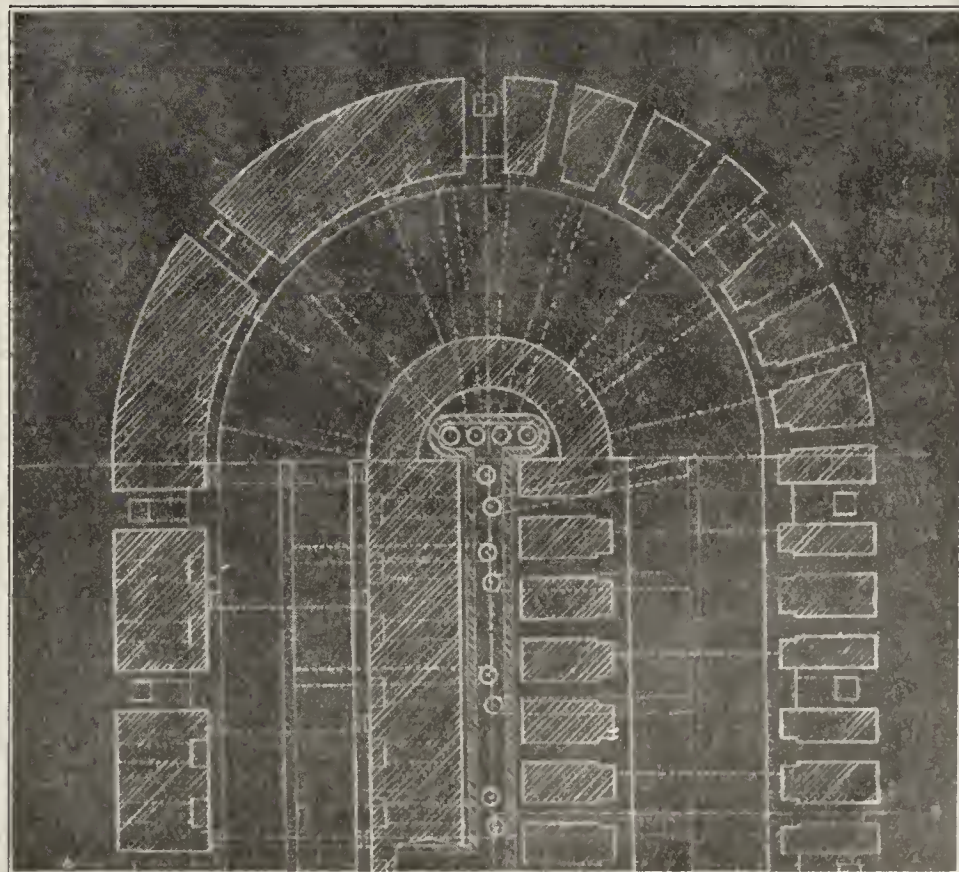
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

MISCELLANEOUS ITEMS

A new tile factory is to be built at Medelia, Minn.

The new plant of the Olean (N. Y.) Pressed Brick Co., at East Olean, is nearing completion.

The Poston Brick Co., Attica, Ind., has started the work of turning out the celebrated Oriental brick.

The output of the Ramsdell Brick Works at Denning's Point, N. Y., so far this season is 18,000,000 brick.

The Le Claire (Ia.) Tile Works has started up and is now operating with power furnished by the I. & I. Co.

The Valley City Brick Co., Grand Rapids, Mich., which suffered a loss by fire will be able to start up their plant within a few days.

The Portsmouth (O.) Brick & Terra Cotta Co. has started up its works again, which were closed down on account of a breakage in the machinery.

The Modesto (Cal.) Brick Co., under the active operation of J. W. Craycroft, has its first large kiln of brick ready to burn as soon as the oil can be supplied.

The Messrs. Mooney, who own large brick-making interests at St. John, N. B., are considering the building of a Portland cement plant in the near future.

Frank Semmons has sold his interest in the Cumberland (Ia.) Brick Works to his partner, A. E. Hadaway, who will continue the business alone in the future.

The Ten Thousand Club, Paul's Valley, I. T., will give information as to the wants of a building brick plant at that place. An experienced brickmaker is wanted.

The Banner Clay Works, Edwardsville, Ill., is now turning out 80,000 brick daily and the quantity will be increased when the machinery is smoothed up and run to its fullest capacity.

A company is being formed at Austin, Minn., to erect a brick and tile plant at a cost of \$100,000. The clay beds adjoining the city on the east have been tested and are pronounced first-class.

The F. H. Goss Brick Co., near the smelter at Tacoma, Wash., has been bought of W. R. Rust and F. H. Goss, its owners, by the Port Townsend Southern Railroad Co. The plant is valued at \$150,000.

W. T. Brasington, Wadesboro, N. C., will build brick plants near Blacksburg and Camden, S. C., to manufacture 60,000 brick daily. The Southern Power Co., Charlotte, N. C., has contracted for the entire output.

The new plant of the Chicago Retort & Fire Brick Co. at Ottawa, Ill., has been entirely rebuilt for the manufacture of fire brick and fire clay products. The buildings are of brick and concrete and cover an entire block.

The Benton Brick Mfg. Co., of Benton, Ark., has sold a third interest in the concern to W. L. Dalton, of Hot Springs, and the firm name has been changed to the Benton Brick & Pottery Co. In addition to the making of building and fire brick, the manufacture of pottery will be taken up.

The Pocatello (Idaho) Pressed Brick Mfg. Co. has had its shale tested and returned in bricks. The clay is capable of making good vitrified brick. C. W. Gray is president, L. B. Gordon secretary, Trux Talbot vice-president, R. P. Brown, treasurer, and L. L. Wall, an experienced clay man, the manager.

A \$10,000 company is being formed at Stockport, Ia., to build a tile factory.

Parker & Hollings, Alpha, N. J., have installed improved machinery in their brick yard.

The Ceramic Brick Co., East Liverpool, Ohio, has increased its capital stock from \$10,000 to \$50,000.

The brick plant of Phillips & Bartlett, near Deadwood, S. Dak., which recently burned, will be rebuilt at once.

R. W. Stewart of Findlay, Ohio, is burning a test kiln of vitrified brick at the Ivie & Son Brick Works at Kirksville, Mo.

The Waverly (Ohio.) Brick & Tile Co. has been incorporated with \$35,000 capital stock by Richard B. Goetz and others.

All the employes of the Larimie (Wyo.) Brick Works struck for shorter hours and higher wages. The company has filled the places of the men and resumed.

Nels Anderson, who for 26 years has held the position of foreman of the yards for the Paxton (Ill.) Brick & Tile Co., resigned the position and will take a needed rest.

The Standard Brick Co., Charleston, W. Va., has a plant located on the site of the old Kanawha & New River Brick Co., which was destroyed by fire some years ago.

The Concord Brick Co., Natchez, Miss., has settled with the insurance company for the destruction by fire of their plant and the business of the company is continued.

The Munford Brick Co. has been incorporated at Camden, N. J., with \$125,000 capital stock. Incorporators are: Joseph S. Munford, Owen McCurdy, and John H. Carr.

The Bloomfield (Ind.) Vitrified Brick & Tile Co. has been incorporated with \$50,000 capital stock. Directors are C. C. Stein, Theo. Schmutz, Wm. Vannuter, Joseph S. Shroyer and Otto F. Herold.

J. S. Detwiler, Elsmore, Kansas, has made a proposition to citizens of that town to drill wells necessary to get gas to supply a brick-making plant. He holds leases on lands where shale has been tested.

The Baldwin County Brick & Pottery Co., Milledgeville, Ga., has been incorporated to manufacture common, pressed and ornamental brick and sewer pipe, by A. A. Vaughn, E. L. Barnes, T. M. Hall and others.

The Paris Press Brick Co., Paris, Texas, recently incorporated, has secured a plant already erected. The president is J. N. Blake, vice-president and manager, E. Jenkins and Wm. F. Jones, secretary and treasurer.

The Burke Sand Co., Ft. Smith, Ark., has been organized with \$15,000 capital stock. This will be operated in connection with the Burke Brothers Brick Co., which has the contract for 71 miles of brick pavement.

The Columbus (O.) Clay Mfg. Co. has been incorporated with \$50,000 capital stock to build a clay plant at Taylor Station, nine miles east of Columbus. Incorporators are: J. E. Landrum, Harry Landrum, Henry Schwilk and Fred J. Schwilk.

D. C. Richardson says that the work on the new brick plant south of Mooringsport, La., is progressing satisfactorily. The plant will be in operation within 4 months and will burn natural gas. The company's general office will be in Shreveport, La.

The Peebles Paving Brick Co., Peebles, O., has increased its capital stock from \$50,000 to \$100,000.

C. E. Broadbent & Son are building some extensive additions to the brick plant at Volant, Pa.

The Tonque Pressed Brick & Tile Co. has finished the building of their plant at Algodones, N. Mexico.

The Mt. Jewett (Pa.) Fire Brick Co., has been incorporated with \$200,000 capital stock. The incorporators are Thos. E. Mouton, J. G. Ansler and John G. Gray.

A large crushing machine has been added to the Aledo (Ill.) Brick & Tile Co.'s plant so as to make a much higher grade of glazed building brick.

The American Lime & Stone Co., Marion, Ohio, has been incorporated with \$150,000 capital stock by Henry A. Schules, Cornelius Breen and J. W. Jacoby.

The Falls River (Mass.) Brick & Concrete Co. has been incorporated with \$40,000 capital stock, W. Dacy is president, and the secretary and treasurer is F. M. Hunter.

The Burke Brothers Brick Works at Ft. Smith, Ark., will be ready for business about October 1st. The company built the plant on account of having 71 miles of brick paving to be laid.

The Spring Garden Brick Co., York, Pa., registered office at Camden, N. J., has been incorporated with \$100,000 capital stock. Incorporators are Clinton D. Frey, Israel Frey and Elmer E. Frey.

Another brick and tile manufacturing plant is promised for Mason City, Iowa. J. E. Blythe of Madison, Iowa, and R. H. Gentry of Kansas City, Mo., are at the head of the deal.

It is understood that Horace Libby of Lewiston, Maine, will retire from the business at the end of the season.

Preparations are being made for the extensive manufacture of brick at Rockdale, Texas, by Vogel & Lorenz.

The Pend 'Oreille Clay Mining & Milling Co., has leased land of W. A. McMurray of Denton. The land is near Hope, Idaho.

A nine-foot vein of kaolin on Big Creek, Gibson Co., Ind. has been found and specimens can be had from C. F. Martin of Cynthiana, Ind.

The Hanover (O.) Pressed Brick Co., is to be reorganized, the money received will be used to enlarge the plant so as to supply the product promptly. C. H. Forry is the manager of the plant.

The Berlin (O.) Brick & Tile Co., has been incorporated with \$10,000 capital stock. Incorporators are L. B. Ayres, C. A. Peake, L. S. Van Scoten, Samuel Ayers and Allen Waldron. They take over the Waldron works.

George L. Pomeroy, Kerby, Mich., who has been supplying clay to the cement plants near by has made a five year contract with the Heele Portland Cement Co., of Bay City to supply their plant with clay.

Rapid progress is being made towards the starting of the brick-making plant at San Angelo, Texas. The sheds have been constructed and they are awaiting the machinery and power plant.

The Schmitt Brick Co., Columbus, Ohio, which was incorporated last spring is now turning out 30,000 brick a day in its Marion store yard. Later it is expected they will ship shale in from the Hocking Valley.

The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO,
Factory, St. Louis, Mo. **ALEDO, ILL.**

DIRECT HEAT

DRYERS

FOR

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

FOR SALE

One Quincy Clay Gatherer and Plow. Brand new, in use only two weeks. Address,

Elk City Brick Co.
Elk City, Kansas.

BRICK PLANT WANTED

Wanted to buy an interest in a pressed or paving brick plant located in Central States and having down draft kilns. Will take a position as manager with privilege to purchase an interest when found satisfactory.

Address: "Manager" Care of Clay Record
Chicago, Illinois

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enamelled Brick & Tile Co.
1 Madison Ave. New York

FOREMAN WANTED

By a tile and brick plant in Central Illinois an outside yard foreman to take charge of setting and emptying kilns, car loading, etc. Address stating experience and wages desired.

A. B. CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO.

39 Cortland St., New York.

50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
131 Lander St., Newburgh, N. Y.

FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address

LOCK BOX 29 CARE OF CLAY RECORD
Chicago, Illinois

BRICK YARD FOR SALE

Old established yard in good town of 5,500 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL
Maryville, Mo.

WANTED

A competent and experienced manager and salesman for sand lime brick factory. Address

BUSINESS MAN CARE OF CLAY RECORD
Chicago, Illinois

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
Leesville, La.

WANTED

Wanted Stoneware Potter—both wheel and Kiln men, Write to

SPOKANE POTTERY CO.
Clayton, Wash.

WANTED

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment.

Address: B. C., care Clay Record
Chicago, Ill.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,

Care Clay Record, Chicago, Ill.

MEN WANTED

Three (3) or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address:

Supt. Missouri Slope Brick and Tile Co.
Dickinson, N. D.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.

L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$45.00.

C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
Redfield, So. Dak.

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Joggers quoted.
R. A. HART, 41 White St.

No better made, cut from
\$8 and \$10, to

4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.

Sold by all dealers
BATTLE CREEK, MICH

MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to 605 Diamond Bank Building | Ohio Clay Products Co. Pittsburgh, Pa. | Salineville, Ohio.

MANAGER WANTED

Wanted—Manager and superintendent of a brick plant established a number of years and making high grade stiff brick. Must be competent to handle peculiar clay and make A1 brick; understand machinery; good business ability; the management of men; have unquestionable habits; first class reference. Address in full and in confidence stating salary expected.

X. Y. Z. Care Clay Record,
Chicago, Illinois

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.

BAKER IRON WORKS
Los Angeles, Cal

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.

Box 81.

Independence, Iowa

GAS ENGINE FOR SALE

FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Answer,

Gas Engine, care Clay Record

Chicago, Ill.

FOR SALE

Startling sacrifice—Completely equipped ornamental brick plant, excellent quality clay, on Baltimore & Ohio Railroad in Ohio, has been bonded for \$80,000.00; for sale unencumbered for \$10,000.00 cash. Address:

E. E. SLOCUM
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BRICK PLANT WANTED

At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacent, Plenty of artesian water. For information address:

WENONA COAL COMPANY
Wenona, Illinois

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DO YOU WANT TO BUY A BUSINESS?

If you want to buy, sell or exchange any kind of business or real estate anywhere at any price, address

FRANK P. CLEVELAND,
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FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.

Sandusky, Ohio

FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash.

POSITION WANTED

By an experienced Potter as Superintendent on turning, glazing, kiln cutting or burning.

Address: N. Z. care of Clay Record
Chicago, Ill.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

79 Chamber of Commerce,
Astoria, Oregon



Vol. XXXI. No. 6.

CHICAGO, SEPTEMBER 30, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, 10 Cents

CARDINAL GIBBONS ON ORGANIZED LABOR

Labor has its sacred rights as well as its dignity. Paramount among the rights of the laboring classes is their privilege to organize, or to form themselves into societies for their mutual protection and benefit. It is in accordance with natural right that those who have one common interest should unite together for its promotion.

Throughout the United States and Great Britain there is today a continuous network of syndicates and trusts, of companies and partnerships, so that every operation from the construction of a leviathan steamship to the manufacture of a needle is controlled by a corporation. When corporations thus combine it is quite natural that mechanics and laborers should follow their example. It would be as unjust to deny the workingmen the right to band together, because of the abuses incident to such combinations as to withhold the same right from capitalists, because they sometimes unwarrantably seek to crush or absorb weaker rivals.

God forbid that the prerogatives which I am maintaining for the working classes should be construed as implying the slightest invasion of the rights and autonomy of employers. There should not, and need not, be any conflict between capital and labor, since both are necessary for the public good, and the one depends on the co-operation of the other. A contest between the employer and the employed is as unreasonable and as hurtful to the social body as a war between the head and hands would be to the physical body.

Whoever strives to improve the friendly relations between the proprietors and labor unions, by suggesting the most effectual means of diminishing and even removing the causes of discontent, is a benefactor to the community. With this sole end in view I venture to touch this most delicate subject, and if these lines contribute to some small measure to strengthen the bond of union between the enterprising men of capital and the sons of toil, I shall be amply rewarded.

But if labor organizations have rights to be vindicated and grievances to be redressed, it is manifest that they have also sacred obligations to be fulfilled and dangers to guard against. As these societies are composed of members very

formidable in numbers, varied in character, temperament and nationality, they are, in the nature of things, more unwieldy, more difficult to manage, more liable to disintegration than corporations of capitalists and they have need of leaders possessed of great firmness, tact and superior executive ability, who will honestly aim at consulting the welfare of the society they represent, without infringing on the rights of their employers. They should exercise unceasing vigilance in securing their body from the control of designing demagogues, who would make it subservient to their own selfish ends, or convert it into a political engine.

We must guard against any word or act that is contrary to the law. Every American citizen has the right to be protected in his efforts to earn an honest livelihood. No man or combination of men should have the power to prevent him from following his vocation even by intimidation, for he may have not only himself but a wife and children for whom to provide. It is my opinion that the honest laborer who is willing to do work which is proper and in no way conflicts with the interests of the community, should be given the opportunity to perform it, and to have the same protection from the authorities which is extended to any peaceful citizen, no matter how powerful or influential may be the person or society which opposes him.

I take for granted that all unions and other societies of American laboring men are disposed to array themselves on the side of peace and order and are as strongly opposed to violations of the law as other citizens. Hence they should exert their influence to see that the laws are upheld if they would maintain the respect with which they are regarded by their fellows. It is not only a question of patriotism, but of self-interest which deeply concerns them.

I am persuaded that the system of boycotting by which members of labor unions are instructed not to patronize certain obnoxious business houses, is not only disapproved by an impartial public sentiment, but that it does not commend itself to the more thoughtful and conservative portion of the guilds themselves. Every man is free indeed to select the establishment with which he wishes to deal, and in purchasing from one in preference to another he is not violating

justice. But the case is altered when by a mandate of the society he is debarred from buying from a particular firm. Such a prohibition assails the liberty of the purchaser, and the rights of the seller, and is an unwarrantable invasion of the commercial privilege guaranteed by the government to business concerns. If such a social ostracism were generally in vogue, a process or retaliation would naturally follow, the current of mercantile intercourse would be checked, every center of population would be divided into hostile camps, and the good footing which ought to prevail in every community would be seriously impaired. "Live and let live" is a wise maxim, dictated alike by the law of trade and by Christian charity.

Experience has shown that strikes are a drastic, and at best a very questionable remedy for the redress of the laborers' grievances. They paralyze industry, they often foment fierce passions, and lead to a destruction of property; and above all they result in inflicting grievous injury on the laborer himself by keeping him in enforced idleness, during which time his mind is clouded by discontent while brooding over his situation and his family not infrequently suffer from the want of the necessities of life. The loss inflicted by strikes on the employers is not much more than half as great as that which is sustained by the employed, who can much less afford to bear it. It would be a vast stride in the interests of peace, and of the laboring classes, if the policy of arbitration which is now gaining favor for the settlement of international quarrels, were also availed of for the adjustment of disputes between capital and labor. Many blessings would result from the adoption of this method; for, while strikes, as the name implies, are aggressive and destructive, arbitration is conciliatory and constructive. The result in the former case is determined by the weight of the purse, in the later by the weight of the argument.—*Putnam's Monthly*.

BRICK MANUFACTURERS UNABLE TO SEND OUT THEIR PRODUCT

Cherryvale, Kansas, Sept. 27.—Shippers here are beginning to be alarmed at the prospects of a repetition of the car famine which for a time last winter practically paralyzed the brick making industry here. Since September 1, the Santa Fe has furnished very few cars to the brickyards here and the Frisco has done but little better.

While the conditions affect all shippers the brick makers suffer most as they ship entirely in carload lots. Thus far they have not been seriously inconvenienced as the storage capacity at the brick yards is not yet exhausted. As soon as they lack capacity to store their surplus the brick plants will have to shut down as they did last winter.

The Brick Manufacturers' association will probably take the matter up with the state board of railroad commissioners, as they did last winter, unless conditions improve within a few days. They have plenty of orders for brick but can not get the cars in which to ship them. As a result of the complaint filed with the state board last winter the brick manufacturers secured the adoption of a system of pro rating cars among shippers during the famine, but the system does not seem to be in operation now.

TO FIND THE FIRING HEAT OF A CLAY

Whenever new beds of clay are being tested, or whenever a fireman enters upon a new situation, it is necessary to ascertain the correct temperature at which the goods shall be fired. In most cases this is a matter of guess-work, of tradition, or of rule of thumb, but there is a proper method of finding this temperature.

According to the directors of the Clay Industry Testing Station in Berlin, the simplest and most accurate method of finding the finishing temperature of kilns for any particular clay is to determine the percentage of water absorbed by the clay after it has been heated to various temperatures, that at which the porosity or absorption becomes constant being the lowest temperature at which the firing should take place.

Thus, if a small brick or tile made from the clay is found to absorb 15 per cent of water when fired at Cone 022, and only 12 per cent at Cone 020, and if no matter how much hotter it is made, the absorption never sinks below 10 per cent without the clay losing its shape, it is clear that for all practical purposes the best finishing heat is Cone 020.

At the testing station just referred to, this method of investigation has been used with great success in ascertaining the temperature to which clays from various sources have been fired in course of manufacture. In this case the percentage of water absorbed by the manufactured article is carefully ascertained, and samples of the raw clay from which it was made are heated to various temperatures, and the water absorption in each case ascertained. If the amount of raw clay available is extremely small one piece may be heated to a low temperature, its power of absorption measured, the piece dried and again heated (this time to a slightly higher temperature), and the absorption again tested, the operation of heating to a gradually increasing temperature and testing for the amount of water which can be absorbed being repeated until the clay attains the same power of absorption as the manufactured article. The temperature to which it has been heated to give this result must be the same in both cases, and in this way the original firing heat of the manufactured article may be obtained with a fair degree of accuracy.

As the repeated heating and soaking affects the clay somewhat, it is better to make a second trial by heating the clay at once to the correct temperature, as found by the previous trials, and to again test its capacity for absorbing water. Thus, if the piece which had been repeatedly heated and soaked showed a power of absorption equal to the manufactured article after it had been heated to Cone 08, a second piece of raw clay should be heated to Cone 010 (that is, 40 deg. lower), and its absorption determined from that temperature onwards, so as to eliminate the injurious effects of the heatings and soakings below this temperature.

When the clay is found to have a smaller power of absorption than the manufactured article, it is a sign that it has been slightly overheated. Thus, a tile having an absorption of 5 per cent at Cone 09, the clay from which it was made would, if heated to Cone 010, have an absorption of, say 6 per cent, and at Cone 08 of say 4 per cent. This would indicate that the original tile had been fired at Cone 09, because its power of absorption is intermediate between the other figures given.

REPORT OF UNITED STATES GEOLOGICAL SURVEY ON EFFECTS OF THE SAN FRANCISCO EARTHQUAKE AND FIRE ON STRUCTURAL MATERIALS

Within a few days after the San Francisco earthquake and fire of April 18, 1906, the United States Geological Survey arranged for an investigation of their effects on buildings and materials of construction, and the results of that investigation have just been published by the Survey as Bulletin No. 324.

The report comprises four papers: The first, by Prof. G. K. Gilbert, geologist of the Survey and member of the State Commission for the investigation of the earthquake, discusses the shock as a natural phenomenon, especially those features of it which would contribute to an understanding of the three following papers. These treat the subject from the standpoint of the engineer, and describe the effects of the shock and the fire on the various structures and structural materials.

Of the engineers reporting on the subject, Mr. Richard L. Humphrey was sent to San Francisco as Secretary of the National Advisory Board on Fuels and Structural Materials, and as a representative of the Geological Survey, in which for the last two years he has had charge of the structural materials laboratories. Mr. Humphrey's investigation began early in May, lasted six weeks, and covered the entire territory affected. Captain John Stephen Sewell, of the Corps of Engineers, United States Army, was sent to the scene of the disaster by the War Department under order of April 23, to make an investigation similar to that undertaken by Mr. Humphrey. Before going to San Francisco he had made a careful study of the effects of fire on buildings and materials, especially as indicated by the results of the Baltimore fire of 1901. Prof. Frank Soulé, dean of the college of civil engineering of the University of California, who prepared the final paper, had not only had wide experience with his subject, but had the advantage of being thoroughly familiar with conditions in San Francisco prior to the earthquake and of being present during and after its occurrence.

The investigations of the three engineers were conducted independently and their papers were written without collaboration, but the opinions expressed are strikingly accordant in their more important features. The report is profusely illustrated, and a list of other important papers on the same subject which have appeared in technical journals and the proceedings of technical societies during the last year is appended to it. Bulletin No. 324 is now ready for distribution, and copies may be obtained without charge by applying to the Director of the Survey at Washington, D. C.

FIRE BRICK FROM LOCK HAVEN TO JAPAN

A shipment of six carloads of fire brick was made from the works of the Lock Haven, Pa., Fire Brick Company last week, their destination being Japan. They were what is known to the trade as "shape" brick, being manufactured for a special purpose. The brick are packed in barrels and crates and sawdust placed about them so that they may not be damaged in transit by rail or steamship on their long journey to foreign consignees.

IMPORTANT CHANGES AT THE NEW JERSEY SCIENTIFIC SCHOOL

Some important changes have become effective with the beginning of the new college year at the New Jersey State Scientific School; chief among these is the new curriculum, which became operative. This new curriculum is the result of a year's patient study of the various courses offered at the college, and other sister institutions, by a committee of the faculty.

The more important of the changes are an increase in the proportion of hours devoted to the technical subjects and the introduction of two new courses of study: namely, a General Science Course and a Mechanical Engineering Course. The following is a brief outline of the revised four-year course in Clay-Working and Ceramics which is now offered:

Mathematics—Algebra, trigonometry, analytics, calculus.

Modern Languages—French and German.

English—English literature, essay writing, declamation.

Chemistry—General, experimental, qualitative and quantitative analysis with especial reference to the silicates.

Physics.

Ceramics—Properties and uses of clays, winning and preparation, the manufacture of bodies, glazes, driers, kilns, ceramic calculations.

Elementary mechanism.

Elements of electrical engineering.

Thermodynamics—Steam engineering.

Draughting.

Surveying—Summer field work.

Geology.

Mineralogy and crystallography.

History.

Political science.

International law or ethics.

Military science.

Military drill.

Laboratory practice with the chemistry and the ceramics.

The revised two-year course, briefly outlined, is:

Chemistry—General, experimental, qualitative and quantitative analysis with particular reference to the silicates.

Physics.

Ceramics—Properties and uses of clays, winning and preparation, manufacture of bodies, glazes, driers, kilns, ceramic calculations.

Geology.

Elements of mechanism.

Draughting.

Students entering with practical experience in clay-working are not required to take military drill, military science, essay writing nor elocution. All others must do so.

Mr. George Bergen Ford, graduate of the Department of Clay-Working and Ceramics at the New Jersey State College, has resigned his place as ceramist at the South Amboy Terra Cotta Co., to accept a similar position with the Winkle Terra Cotta Co., of St. Louis, Mo. Mr. Robt. W. Cobb, a classmate of Mr. Ford's at the New Jersey School, has followed in Mr. Ford's place at South Amboy. Mr. Cobb was formerly ceramist for the Standard Terra Cotta Co., of Perth Amboy, and more recently has been connected with the New York office of Sayre & Fisher Co.

Mr. Walter H. Wilson, of the class of 1907, of the Department of Clay-Working and Ceramics, has been employed by the American Clay Products Co., of Forty Fort, Pa., as ceramist.

Plans have been accepted and ground will soon be broken for an engineering building to cost \$60,000. This will furnish accommodations for the departments of civil engineering, mechanical engineering and electrical engineering.

THE INFLUENCE OF GRINDING ON STONY CLAYS

It has been known for some time that the grinding of a stony clay could under some circumstances so influence its composition that such a clay would no longer fall to pieces a short time after it had been fired, but although Mr. E. Cramer by experimental work showed that it was useless to grind the stone mixed with the clay to particles smaller than one-twentieth of an inch in diameter, no really systematic work of value was done before Herr de Sharengrad published the result of his work, which is of considerable interest.



A BEAUTIFULLY TILED DINING ROOM

The clay used in this case was of a particularly stony nature, being part of that great mass of boulder clay which spreads over large tracts of Central Europe, and of which brick can only be made with much difficulty, because the stone, being converted into lime in the kiln, absorbs water and carbonic acid from the atmosphere when the brick are stored, and by its expansion causes them to fall to pieces.

Herr de Sharengrad's experiments consisted chiefly in separating some of this stone from the clay, and, after washing it, grinding it up and separating it by means of sieves into particles of 1/50th, 1/25th, 1/12th, and 1/6th of an inch in diameter.

Particles of stone of each size were then mixed with the clean clay in the proportion of 2, 5, and 10 per cent respectively, and bricks made from these different mixtures.

In this way twelve different kinds of brick were obtained, and eight bricks were made of each kind. On coming from the kiln half the bricks were at once placed into cold water for ten minutes, so as to see the effect of dipping; the remaining bricks were placed some in the open air, some in the office.

After a month it was found that the clay containing 2 and 5 per cent. of stone ground to 1/50th of an inch diameter still remained good, though the brick containing 10 per cent of stone of this fineness had begun to split in less than

a fortnight, in spite of their being kept in the office and not exposed to the weather.

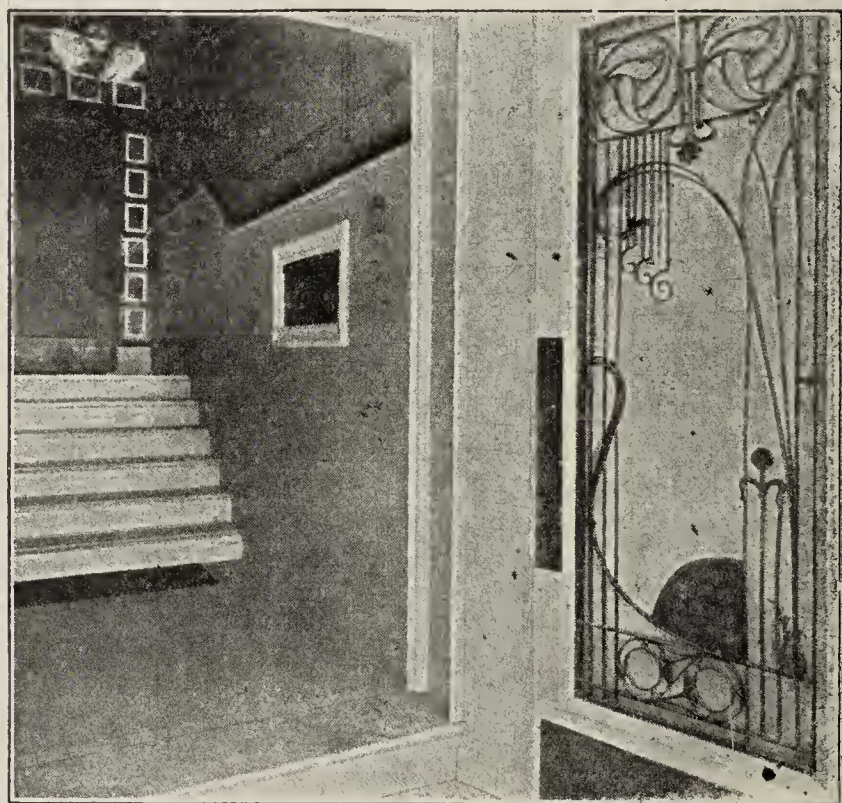
The clay containing stone 1/25th of an inch diameter split up when more than 2 per cent of stony matter was present, the time required for the destruction to take place varying from a week to a fortnight.

The same proved true of good brick containing stone particles of 1/12th of an inch in diameter, though in some cases they took a month before any defects were noticeable.

Clay containing stone particles as large as 1/6th inch showed signs of disintegration even when only two per cent of stone was present, and with larger proportions the disintegration was rapid. In the case of the 2 per cent samples the damage was not very noticeable, and in one case the brick appeared quite sound.

Taking the brick as a whole, those which were kept indoors lasted longer than those stored outside, and roughly speaking the larger the particles the greater the proportion present the more rapidly did the brick disintegrate. It was, therefore, necessary to set the mills and rolls so that particles should be reduced to not more than 1/50th of an inch diameter.

This was found to be impossible in actual practice, as, no matter how carefully the machines were set, the natural movement as well as wear and tear allowed a considerable number of pieces of stone measuring 1/6th of an inch in one direction at least to pass into the mixing plant. Another "cure" was therefore sought.



A TILED VESTIBULE

The custom in burning had been to finish a firing as soon as the kiln had reached a definite temperature, but a microscopic examination of the clay showed that the stone remained free and quite uncombined with the clay. It was, therefore, sought to bring about a chemical combination by means of greater heat and a longer time of exposure in the kiln. Originally the kiln was kept for eight hours in full fire, and finished at Seger cone 08—a temperature sufficiently high to convert the stone into lime, but not to bring about any combination with the clay.

After numerous trials Herr de Sharengard now burns this clay for 48 hours instead of only 8 hours, with the pleasing results that the extra time the goods are exposed to the heat enables a combination to take place between the lime and the clay, and that a brick fired under these conditions not only remains free from "blowing" and disintegration, but is actually stronger, the slight vitrification which has taken place binding the particles more closely together.

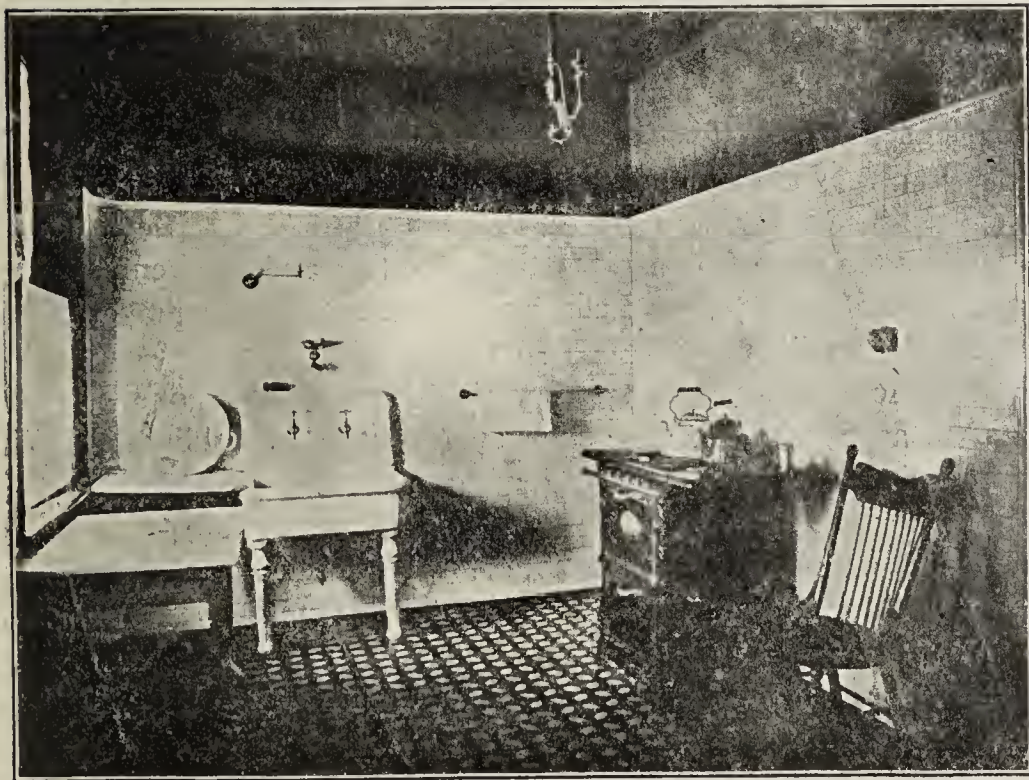
Consequently, it may be argued that it is not only grinding that influences the strength of brick containing stones or lime, but that the chief point is to keep the kiln at the higher temperature for such a length of time that chemical combination between the lime and the clay may take place and a solid brick be produced.

Another and a cheaper method of preventing brick from breaking up when lime is present is to dip them in water immediately they are drawn from the kiln. All the dipped brick in the foregoing tests remained sound even when the largest particles of lime were present, and where customers will accept wet bricks this is the simplest method of procedure.

CERAMIC TILING AS A SANITARY WALL COVERING

By Charles James Fox, Ph. D.

This is an age of science. Scientific investigation is carried on everywhere in all departments of life. It is pursued with enthusiasm by those who have received the requisite mental training, and receives popular approval even from those who fail to comprehend its methods. The layman accepts scientific principles with absolute faith and applies them with confidence. The practical application of sanitary science, for instance, invades our private life even



A NICELY TILED KITCHEN

to the extent of altering our diet, our dress, and even the construction of our homes.

In modern building operations the laws of sanitation are given almost as much consideration as the laws of physics. Municipal building ordinances provide penalties as great for

the infringement of the laws of sanitation as for the violation of the ordinary principles of construction. The present day popularity of tiling as floor and wall covering is due to its absolute cleanliness, even more than to its attractive appearance. The tiled wall is proof against moisture, dampness, fire, vermin and germs. Its utility, beauty and durability combine with its sanitary qualities to make it the most appropriate of all wall facings in many parts of the private house and of buildings in general. In bath rooms, where it is now in general use, it is not affected by the water which is inevitably splashed about or by vapors, both of which are so destructive of other less durable wall facings.



TOILET ROOM TILED THROUGHOUT

Its decorative qualities set off admirably the porcelain fixtures and bright metal work of the modern plumbing. The combination of decorative tile with the attractive modern plumbing fixtures, have made the modern bath room in appearance one of the most attractive rooms in the house. The beauty and durability of tile, combined with its real economy when compared with the initial cost and subsequent repairing of the hard wood panels or expensive wall paper, are making the clay tile a popular material for the wainscoting of the vestibule and hallways. Here, however, its sanitary qualities are more or less secondary. The European custom of tiling the wainscoting of the dining room is just beginning to find favor in this country. But here again it is the ornamental rather than the sanitary properties of the clay tile which recommend its use.

In the kitchen, however, the sanitary qualities of the tiled wall or wainscoting are once again the all important consideration. Greasy deposits and splatterings of all sorts inseparable from culinary operations, frequently soil the kitchen wainscoting. If this is made of wood or any other porous material, much of this organic matter is absorbed, and in decomposing renders the wall in a most unsanitary condition. If the wall is tiled, however, none of this dirt can be absorbed and it is removed from the surface of the tile as easily and as thoroughly as from an ordinary dinner plate. Except in the bath room, the sanitary properties of the clay tile are more important in the kitchen than in any other room of the house.

LARGE EASTERN COMPANY WILL BUILD CLAY WORKS IN UTAH

A deal involving the manufacture and marketing of fire brick, sewer pipe, drain tile, paving brick, fireproofing, clay lumber, roofing of all kinds, and, in fact, every variety of clay product has been closed and announced at Salt Lake City, by Stowe & Palmer, real estate agents, acting for a syndicate of eastern capitalists who are now interested in several immense clay manufacturing concerns in the east.

Between two and three square miles of clay beds have either been purchased or options secured on them in the state; plans are now under way for the erection here of a \$300,000 manufacturing plant, and an eighteen-acre site has been secured within the city limits of Salt Lake for the factory—this, in brief, is the deal.

Stowe & Palmer have been at work for months securing options and purchasing outright the clay beds. The clay from these beds has been given every known expert test to determine its quality and variety. The result of these tests more than anything else is what has brought about the successful closing of the deal. The Salt Lake and Utah market for clay products of every kind is recognized as one of the finest in the entire west, and this was the original incentive for the investigation of the state's clay beds and for the consummation of the deal.

The largest and most important bed of clay which the easterners have purchased is a 640-acre tract near Fairfield on the Sen Pedro and known as the Fairfield beds. The greater part of the tract is plastic clay of the finest kind, its quality being equal to that of which standard fire brick are made. From the plastic beds of the Fairfield tract can be made, according to the report submitted to the easterners by experts last week, as fine fire brick as are manufactured in the United States. For the past few years the two largest fire brick manufacturing concerns in this section of Utah and one in Salt Lake City have been using clay taken from the Fairfield beds, and their products have gained a national reputation. These companies have been paying royalties on the clay.

In the past month practically every clay bed in Utah of any size or worth has been tested by the experts employed by the eastern men who will establish the manufacturing plant here. Practically every bed that showed favorably under these tests and was not being worked by competitive companies has been taken up by Stowe & Palmer for their clients, so that the known clay supply of this state which is not owned by competitive companies is now owned or under option to the eastern concern.

Stowe & Palmer stated that they were not at liberty to give the location of the plant site that has been secured here for the manufactory. It contains eighteen acres and will give room for an immense establishment, employing over 250 men when running to capacity. It is expected work will be started on the plant early next spring.

The easterners are preparing to incorporate with a capitalization of \$500,000. The bond issue will be \$300,000.

Several local men have asked for an interest in the company and it is possible that considerable local capital may be represented in the concern before the plant is finished.

The deal is of the greatest importance to Salt Lake, as the new company comes backed with plenty of money and has already put up a big sum in cash in purchasing clay beds.

BROTHERHOOD GAINED 16 OUT OF 28 OF ITS DEMANDS BUT HAD TO GIVE UP THE CLOSED SHOP

The recent adjustment of the wage scale for two years through a joint conference of domestic Pottery Manufacturers and the Brotherhood of Operative Potters was an excellent piece of work.

It was demonstrated that no general advance in wages could be granted under the peculiar condition of selling prices. Some slight advances were obtained, however, also a good deal of information as to the real cost of ware to the manufacturer. The right of owners to employ non-union men was tacitly admitted, and the term of apprentices in some instances shortened.

Both the committees had a majority of clear-headed and right-hearted men. The semi-Socialistic element found no representation in the workmen's delegates, and President Duffy, for the Brotherhood, proved again to be the fair, square gentleman that the potters have always trusted.

The agreement entered into between the two committees who had full power to act, becomes operative Oct. 1, and remains in force until Oct. 1, 1909. In brief the following propositions were accepted by the manufacturers:

Plain edge plates increased one-half cent per dozen and one-fourth cent increase on plain edge saucers, hotel fruits and ice creams and on 4, 5, 6, 7 and 8-inch edge plates of all weights.

One-fourth cent additional for all ware stamped in clay state. Kilnmen and kiln drawers shall not be required to wheel out sagger shords.

Pin boys to receive \$2 per kiln and 25 cents per hundred for saggars cleaned for first ring, kilnmen and firm to pay even shares.

Kilnmen when required to place saggars "flat on" in the first ring of biscuits kilns to receive three-quarters of a day extra for 14' 6" diameter kilns and one day extra for 15' 6" kilns and one and one and one-fourth days for 16' 6" diameter kilns.

Kilnmen working in flint to receive 25 cents extra per kilnmen's day.

Minimum price for turning Baltimore teas and St. Dennis teas and coffees, 2½ cents per dozen for teas and 3 cents per dozen for coffees.

To place steam heat in packing sheds in winter season.

One apprentice for first journeyman handler; additional apprentice to every three journeymen handlers employed thereafter.

Manufacturers to provide shelter for returned packages, filled with straw to prevent freezing.

No work on July 4, Labor Day and Christmas.

Disputes not settled by standing committees in 90 days go to back to parties concerned.

When apprentice or dipper is put on, firm to receive 10 per cent of \$3.50 per day for first three years.

Apprentice dippers to receive—first six months \$1.50; second six months, \$1.75; second year, \$2.25; third year, \$2.75, and thereafter, \$3.50.

Kilndrawers not to draw kiln when heat at door is 110 degrees.

THE GILLETT, DOORLESS, HOT AIR BLAST FURNACE FOR KILNS

The above is one of the latest improvements that is offered to the readers of THE CLAY RECORD. It is patented and made by A. Gillett & Co., of Aledo, Ill. Mr. Gillett is a brick manufacturer of many years' standing and has had much experience in burning kilns and in kiln building.

In describing the furnace we ask you to look at the numbers on cut No. 1 which shows a section and an elevation of the front and side of the furnace.

No. 1 is the Crown block, with flues for letting air directly into combustion chamber, or bag, forming a perfect combustion and circulation of heat, burning all gases and smoke; also keeping wares from shrinking and melting around fires and driving heat to bottom kilns, burning wares more even. This is not attained by any other furnace on the market today.



GILLETT DOORLESS FIRE-BOX

No. 2 they claim is the Arched block, forming arch over arch pit, also coking table at bottom of coal box. By keeping coal hopper, No. 4, filled with coal, same will feed off of table continuously as it burns down. As coal box, No. 9, is air tight all of the gases are burned out of coal before it goes into ash pit. The ash pit being large and roomy the fires can be kept free from clinkers with very little trouble, as coking table, No. 9, holds up the fire from falling down.

Numbers 3 and 4 are blocks forming coal box and are gained and bolted together, making an indestructible box.

No. 4 is a heavy cast coal hopper, heavy ribbed and is bolted to crown block.

No. 5 forms the front of the coal hopper and is hinged at bottom. It can be thrown over when through burning, completely closing the top of the coal box, and is all that is necessary for keeping out air. This door can also be closed in drying off if necessary.

No. 6 is a door for regulating the flow of hot air. It has a handle and ratchet for setting same and can be closed tight when through burning.

No. 8 is a fire brick made expressly for lining these furnaces. They are tongued and grooved together and cannot get out of position.

Some of the claims that are made by the firm regarding these furnaces are:

1. That they will consume all smoke and gases after the crown block is heated.

2. That they will take (by actual test) from 15 to 20 per cent less coal than other furnaces.

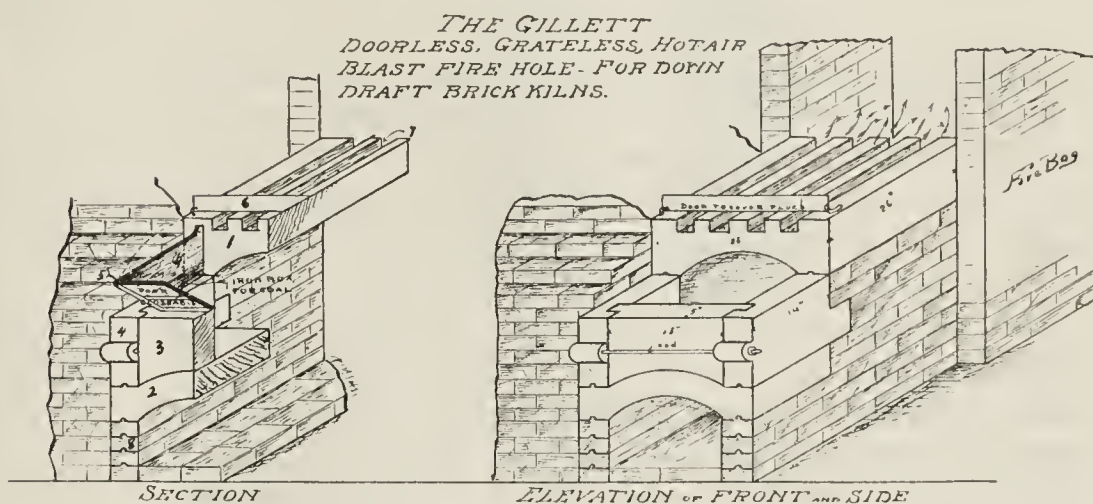
3. That they will not clinker, if fired as per directions, and that one man can fire 25 of them as easy as 10 of other furnaces.

4. That they are made out of a high grade Fire Clay, guaranteed for five years, excepting fire brick lining, and they will replace all parts giving out in this time if handled according to directions.

5. That they being in solid blocks are an easy furnace to set up, and can be set up by any ordinary laborer.

The directions for setting up the furnaces are very simple as will be seen by the following:

Take the blue print and look the numbers over carefully. Dip the fire brick in a thin solution of milled fire clay, and drive them down as close as possible. Place the blocks as numbered, using as little of milled fire clay as possible to set them. Leave the slotted point at front of coal box loose,



using no clay, so as to leave room for expansion. Place bolts in slots of Crown Block, No. 1, to bolt on coal hopper before setting same. In using these furnaces in new kilns, build base of kiln out from the main wall 14 inches, as per blue print. When these furnaces are placed in old kilns where walls are straight up and down they can project 14 inches out from wall, or front line of crown block, and they are so constructed that a bolt can be used to hold the coal box together. Where kilns have base no bolt is necessary.

A. Gillett & Co. will give further information to those that are interested and send testimonials from many of the users of the furnaces.

BUILD CONCRETE ADDITION TO PEN

Owing to the inability of officials in charge of the United States penitentiary at McNeils Island, Tacoma, Wash., to secure brick-making machinery in time to manufacture the brick needed for the construction of the addition being built to the prison, to complete it this year, it has been decided to construct the addition of reinforced concrete. This alteration in plans, which will considerably increase the cost of the addition, has been authorized by the war department and work upon the concrete portion of the structure is progressing rapidly.

THE BEST TESTS FOR BRICK

Difficulties which have arisen in various markets, and especially in Berlin, have resulted in an elaborate investigation being made by Dr. Hans Hirsch on behalf of the German Clayworkers' Association, who have recently published the results of this investigation.

According to the textbooks, regularity of form and size, smoothness of surface, sharp, clean cut edges good ring and thin regular joints when erected are the chief characteristics of good brick, inasmuch as they indicate a carefully made product from a homogeneous material.

With improvements in other branches of constructional work these characteristics are not considered sufficient and many lots of brick generally considered to be of good quality do not by any means conform to this simple standard. This is especially the case with partially vitrified brick, many of which are of undoubted excellence, yet have a poor ring when struck.

The external appearance of the brick appeals strongly to the ordinary purchaser, but too much stress must not be laid on appearance only, or very erroneous conclusions will be reached.

Density and Absorption.

One of the best methods of arranging a varied assortment of brick is by means of their density and power of water absorption. To measure the water absorption the brick must be thoroughly dried at about 50 degrees Cent., weighed, and then soaked in water for some time. It is better not to completely cover the brick at first, as the air in the pores will escape more easily if a small portion is left above the water for the first portion of the soaking period. After the brick are thoroughly soaked they are taken out, wiped dry with a cloth, and weighed. They are then put again into the water, and the process of soaking, wiping and weighing repeated, and it is certain that the brick are fully saturated and can absorb no more water. It is not sufficient to soak for an hour and then wipe and weigh as some brick do not become saturated with a single soaking.

The increase in weight gives the amount of water absorbed, and this multiplied by 100 and divided by the weight of the original (dry) brick, shows the water absorbed per cent.

The density of a brick will be widely different in most cases, according as the pores are included or omitted from the measurements; but in a perfectly vitrified brick (which has no pores) the volume weight and specific gravity will be identical. In a porous brick the latter will be $1\frac{1}{2}$ or 2 times the former, and the relation of the two often gives a valuable indication as to the extent to which the brick has been vitrified or fully burned.

The volume weight is best measured by first saturating the brick with water, then placing it in a suitable measuring vessel and find in its volume by ascertaining what amount of water is necessary to add in order to make the total volume of brick and water up to an amount which can be conveniently measured. If a vessel like that shown in Fig. 1 is employed, its capacity as to the mark o is carefully measured, and the difference between the amount of water

required to fill it up to this mark when the vessel is empty and when it has a brick inside, if added to the amount of water absorbed by the brick during saturation, gives the means of calculating the volume weight.

The specific gravity of brick is determined by grinding to powder and measuring the volume of a given weight in a similar manner to that just described, but in a smaller apparatus. Full descriptions of the methods used for determining the specific gravity of powders can be found in elementary textbooks on chemistry, and need not be repeated here.

The volume weight is the volume of unit weight of the whole material including pores; the specific gravity is the relation of weight and volume of the material itself, the pores being excluded.

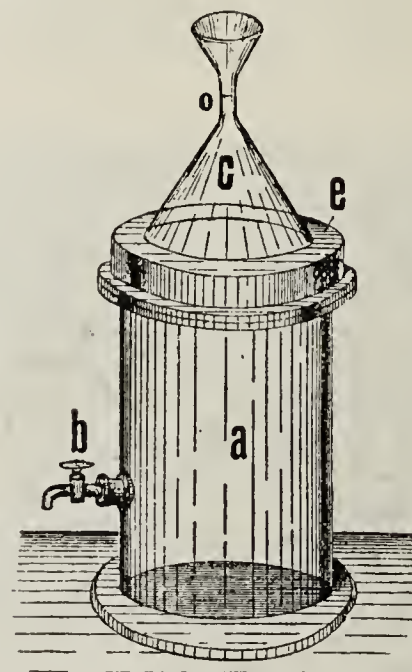


Figure 1.

Solidity and Durability.

In actual practice more value is often placed on the strength and durability of a brick as measured in certain ways than on its porosity and density. The strength is usually determined by finding the resistance to crushing of a cube cut from the brick, and generally the test is made on (a) dry brick, (b) wet brick, and (c) brick which have been frozen and thawed 25 times before testing.

The cubes are best made by sawing the brick to the desired shape, as it is difficult with a hammer and chisel to get sufficiently flat surfaces to secure a good bedding. When necessary, a perfectly even face can be given by laying a little cement mortar on a flat sheet of glass, and bedding the brick in this. When sufficiently hardened the brick is turned over and the opposite face imbedded in cement in a similar manner. The weight of the brick is usually sufficient to produce two perfectly parallel faces if the mortar is of the correct consistency.

A sheet of wet blotting paper between the glass and mortar will enable them to part more easily, and care should be taken not to have too thick a layer of mortar on the face of the brick.

The effect of testing wet brick and comparing their strength with those tested dry is very interesting, as when a sufficiently large number of samples are examined it will be found that the presence of water seriously weakens their

resistance to crushing (sometimes by as much as 30 per cent).

It is not a little strange that no relation should exist between the density and resistance to crushing, but hitherto no such connection has been definitely found.

There is a general impression that durability can be tested by treating brick with strong salt solutions; and testing their strength after these solutions have been allowed to crystallize in the brick; but it is far better to expose the brick repeatedly to actual frost. Freezing and thawing alternately twenty-five times is now a recognized test, and the loss of resistance to crushing gives a very fair idea of the relative value of different brick from the stand-point of weather resistance.

Resistance to Rubbing

To test their resistance to wear and tear, the most satisfactory test at the present is made with a Böhme rubbing machine, in which a rotating plate driven at a certain fixed speed is pressed against a brick with a fixed pressure. The addition of a small quantity of emery gives the necessary gripping power, and the loss of weight gives some indication of the softness and lack of durability of the brick.

In America the brick are placed in a kind of ball mill (called a rattler), and the loss of weight after 15 minutes' treatment recorded.

Soluble Salts

The method used for testing for soluble salts has been given so frequently in our Journal that it is unnecessary to repeat it here.

Special Tests

In connection with Flettons and Lime-Sand brick, it is necessary to ascertain the degree of adhesion of mortar, as there is a tendency to weakness in this direction with

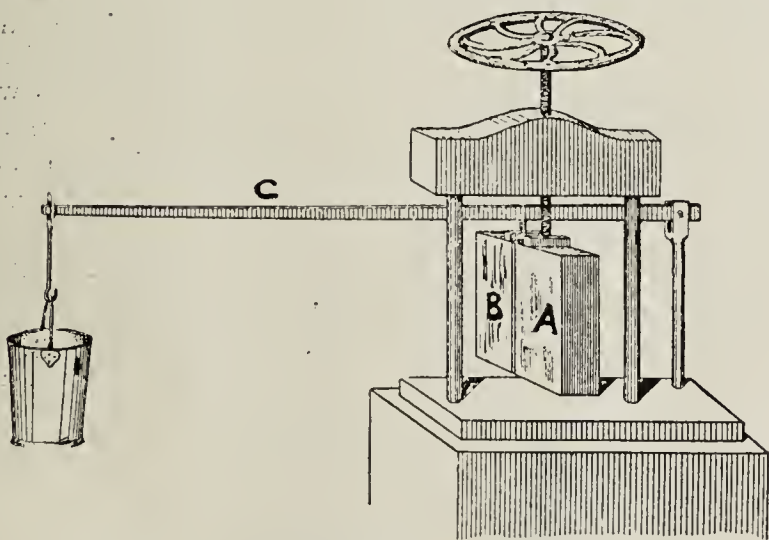


Fig. 2

some brick. This may best be tested by carefully joining two brick with a standard mortar composed of one measure of lime paste, and three measures of sand, and treating them when the joint has completely hardened in the apparatus shown in Fig. 2.

As will be seen, the brick A is held in place by the vertical screw, which can be regulated to hold it quite tightly, whilst the brick B is subjected to pressure from the lever C acting through a small pin at the centre of the top of the brick. By adding shot to the bucket at the end of the lever in a regular stream, and at a constant rate, it will be found that a certain (fairly constant) weight is required to break the joint between brick A and B, and this weight forms a

basis on which to judge brick made of different patterns or materials. The results are most conveniently expressed in pounds per square inch of jointing surface.

Testing for Waterproofness

Especially in the case of roofing tile, it is necessary to find the proportion of water which will leak through in a given time, and of the various tests proposed for this purpose none are entirely satisfactory. Dr. Hirsch has, therefore, devised a modification of Ludwig's test, in which a much larger supply of water can be used.

The apparatus used is shown in Fig. 3, and is quite simple. The brick or tile is painted on all except one face and a portion of the opposite one with waterproof shellac or varnish. The face, which has been partially covered, is then fitted with a glass tube 8 inches high and $1\frac{3}{8}$ inches in diameter,

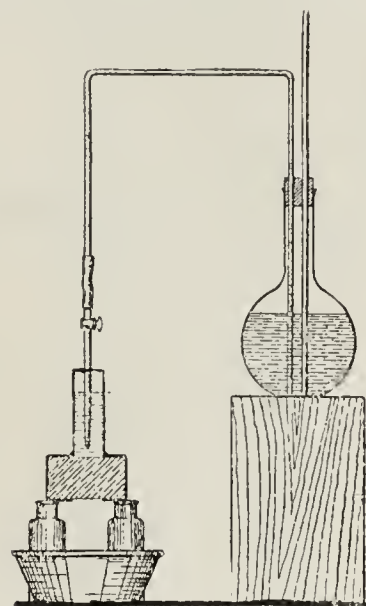


Fig. 3

and fastened with a little cement. Into this cylinder a glass tube with tap dips, and keeps the water in the cylinder at a constant level, the water absorbed by the brick or tile being automatically replaced by a fresh supply from the flask with which the glass pipe is connected. The brick or tile is supported on a couple of uprights of any convenient material.

In this way the time taken for the under surface of the test piece to become moist, dew covered, and to liberate drops of water can be readily observed, and the time to pass a pre-arranged quantity of water through the article can be readily measured, and valuable informations as to the relative waterproofness of different tile obtained.

Brick and tile from different districts vary greatly in this respect, and curves showing the amount of water passing through in different periods of time are interesting and worthy of more careful study.

Rapidity of Drying

In these days of rapid building, the speed at which brick will dry after being saturated with water is of considerable importance. Some idea of the relative speeds of drying may be obtained by placing one of the soaked brick used for determining the water absorption on a glass or plate (so that no water will be sucked out of it, as when it is placed on wood), and weighing it at frequent intervals. The weight of the perfectly dry brick having been previously ascertained, the time taken to lose its water is readily found—about ten to fifteen days—being the average.

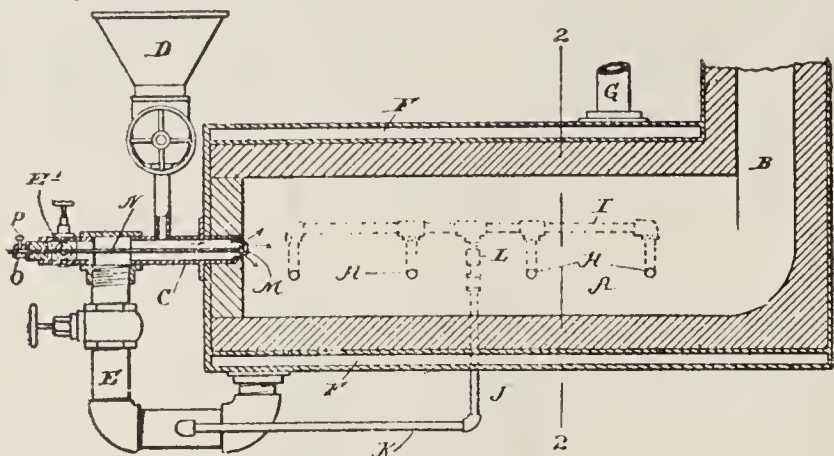
--British Clayworker.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

858,640. Method of Burning Finely-Divided Fuel. George S. Welles, Chicago, Ill. Filed April 30, 1906. Serial No. 314,450.

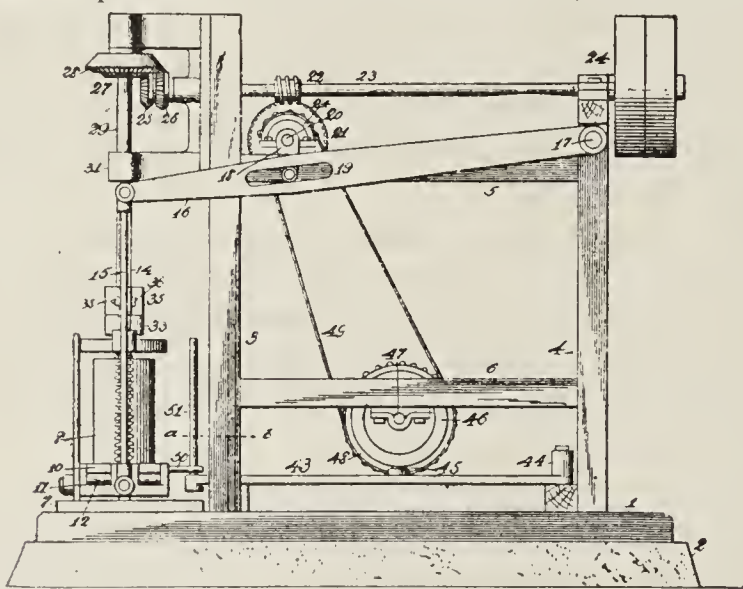
The herindescribed method of burning finely divided fuel which consists in directing such fuel relatively radially into revolving air currents.



The hereindescribed method of burning finely divided fuel which consists in introducing into a combustion chamber lateral rotating previously heated air currents following the peripheral walls thereof, and introducing inwardly of said air currents and in a direction toward the same admixed finely divided fuel and a previously heated fluid vehicle therefor.

859,287. Tile-Machine. George Ferguson, Waterloo, Iowa. Filed Feb. 8, 1907. Serial No. 356,331.

In an organized tile machine, the combination of a vertically reciprocating mold for the outside of the tile, a revolving-head adapted to form the inside thereof, levers and con-



necting links adapted to move the mold up and down, cranks connecting with said levers and driving mechanism substantially as described to revolve the forming-head and to slowly raise and lower said mold.

859,875. Process of Enameling Bricks, Tiles and Building Blocks. Hugo Gallinowsky, Cincinnati, Ohio, assignor to Laurence Elkus, Indianapolis, Ind. Filed June 1, 1907. Serial No. 376,849.

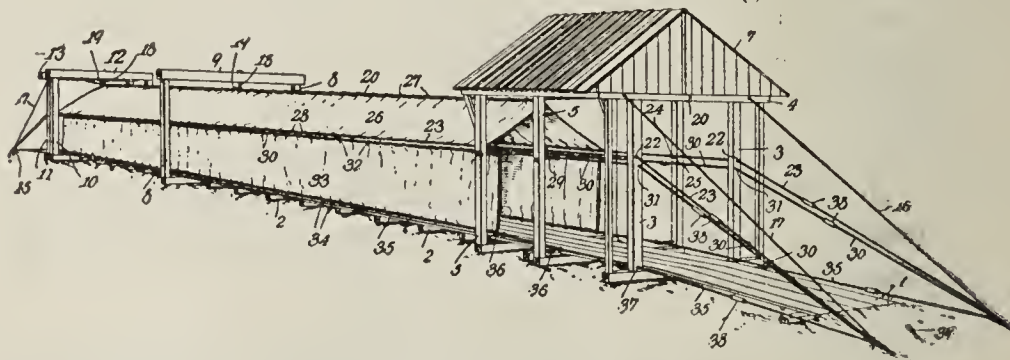
The process of enameling brick or other refractory material, first, by applying cement mixed with sawdust to the face of the refractory material; secondly, covering the glass of suitable size with the same mixture, applying the covered side of said glass to the treated face of the said refractory material, removing the aforesaid glass after a suitable period, substantially as described.

The process of enameling refractory material, first, by

washing the face of the refractory material to be enameled with a mild solution of the hydrochloric acid; secondly, treating said face of said refractory material with a mixture of cement and vegetable fiber; thirdly, applying the said mixture of cement and vegetable fiber to a sheet of glass of suitable size; fourthly, applying the said covered side of said glass to the treated face of said refractory material, and finally removing said glass, substantially as rescribed.

860,120. Open-Air Brick-Drier. William Bernard, Fredericksburg, Va. Filed June 21, 1906. Serial No. 322,789.

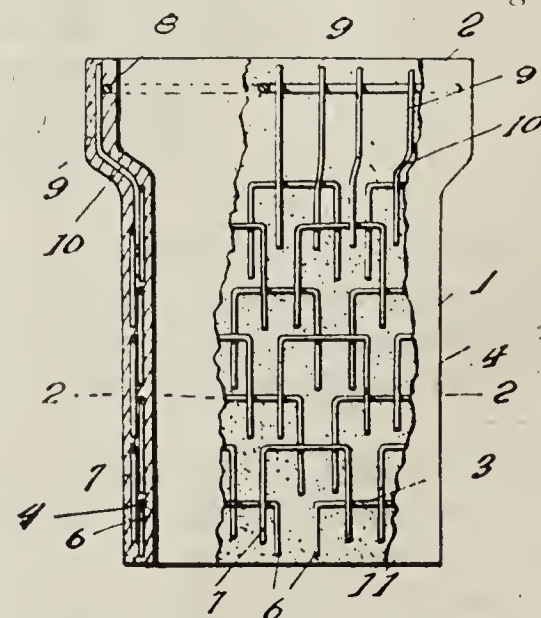
In a brick drying apparatus the combination with a series of spaced uprights and cross beams connecting the same; of a housing disposed at one end of said series, a ridge wire carried by the cross beams and extending through the housing, eave wires detachably supported by the uprights and extending through the housing, anchoring means disposed adjacent the ends of the apparatus, adjustable tensioning devices connecting the eave wires and anchoring means, and a fabric covering slidably supported upon the ridge and eave wires and movable thereon into the housing.



A brick drying apparatus comprising a stationary platform, a housing supported above the platform, series of spaced uprights at opposite sides of the platform, transversely extending cross beams supported by the uprights, a ridge wire detachably supported by the cross beams and extending into the housing, eave wires detachably supported by the uprights and extending through the housing, upper and lower side wires detachably supported by the uprights, anchoring means adjacent the ends of the platform, adjustable tensioning means connecting the anchoring means with the eave and side wires, a fabric covering slidably mounted upon the ridge and eave wires and movable into the housing, and curtains slidably mounted on the side wires and movable into the housing.

860,400. Sewer-Pipe. Edward L. Maag, Clarksburg, Ohio. Filed April 28, 1906. Serial No. 314,315.

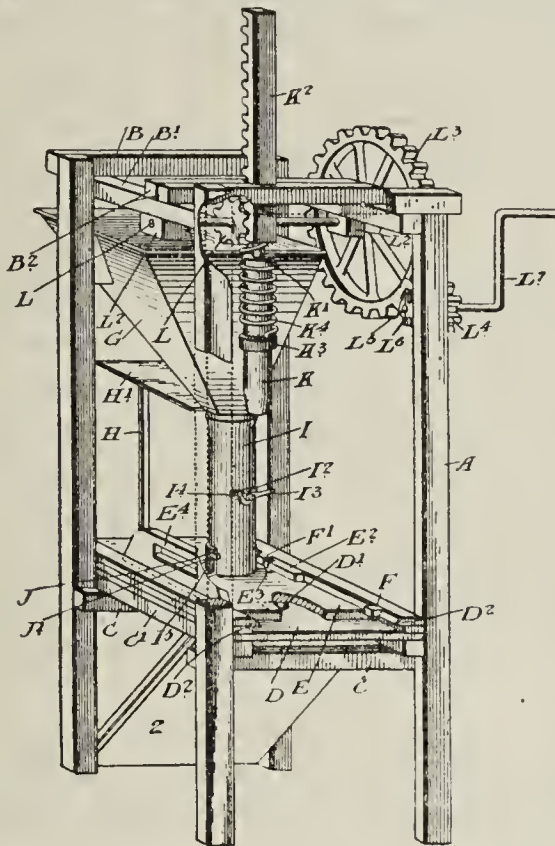
A concrete construction embodying a series of angular reinforcing ties with cross members and longitudinal mem-



bers, said ties being arranged in staggered relation and in successive layers of which the cross members of the outer layer overlap the longitudinal members of the inner layer and the longitudinal members of the outer layer overlap the cross members of the inner layer.

A concrete construction embodying reinforcing ties of angular formation, each embodying a cross member and a longitudinal member and arranged in staggered relation and in successive layers, the outer layer being arranged in staggered relation to the inner layer and the ties of the outer layer overlapping and in contact with the ties of the inner layer.

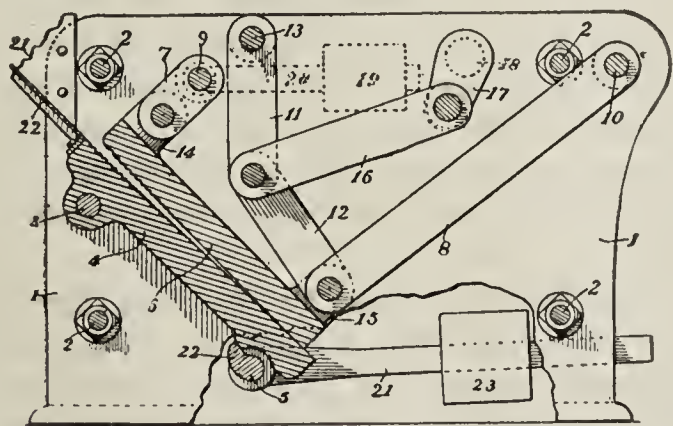
860,000. Concrete-Tile-Making Machine. William Wettlaufer, Stratford, Ontario, Canada. Filed March 26, 1907.



A tile making machine comprising a table having a hole therein, a slidable table thereon having a hole therein adapted in one position to register with the hole in the first table, a mold surrounding the hole in the slidable table and carried by said table, a hopper adapted to deliver material to the mold, a cut-off plate for the hopper carried by the slidable table, a reciprocating plunger, and means for reciprocating the plunger through the mold and registered holes to force the core from the mold.

860,783. Machine for Crushing and Pulverizing. Willard J. Bell, Newaygo, Mich., assignor to Newaygo Portland Cement Company, Newaygo, Mich.

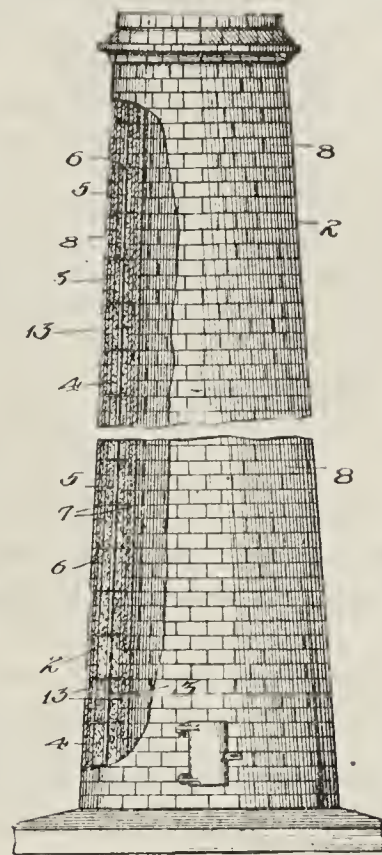
In a machine for crushing and pulverizing, in combination with a longitudinally movable jaw adapted to move in an arc of comparatively short radius at the upper end and moving in an arc of comparatively long radius at the lower end, means for moving said jaw, and a comparatively stationary jaw opposite the movable jaw and arranged in contact therewith at the lower end, and also spaced apart therefrom at the upper end.



In a machine for crushing and pulverizing, the combination of a substantially stationary jaw, a pivotal support for the upper end of the same, a yielding support for the lower end of the same, a movable jaw slidably engaging the lower end of the stationary jaw, pivoted arms of comparatively long radius supporting the lower end of the movable jaw, an arm of comparatively short radius supporting the upper end of the same, and means for oscillating the arms and movable jaw.

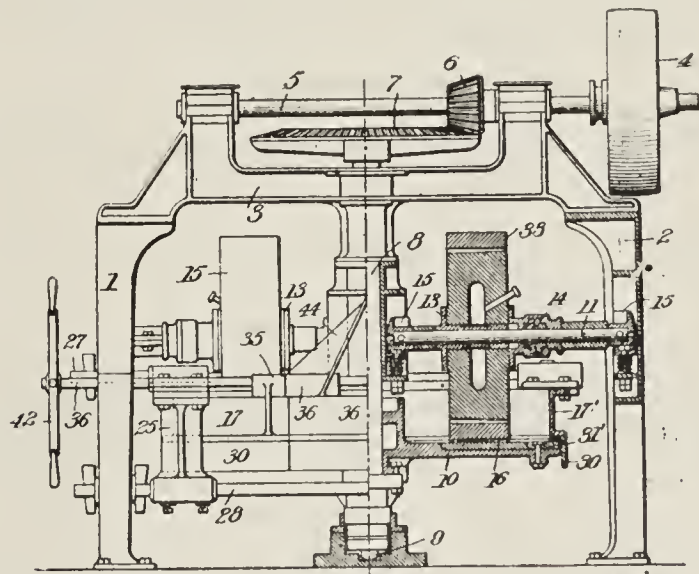
861,175. Chimney Construction. Heinrich R. Heine, Chicago, Ill., assignor to The Heine Chimney Company, a corporation of Illinois. Filed Dec. 16, 1905. Serial No. 291,959.

A smoke stack consisting of a pair of concentric, spaced-apart walls built up of brick or the like material, the bricks in said walls having vertical registering spaces filled with molded keys which support the bricks against lateral movement relative to each other, means for anchoring said concentric walls to each other, a filling between said walls made of plastic material, and means for stiffening said filling on lines parallel to said concrete walls.



A smoke stack consisting of a pair of concentric walls built up of bricks and like material having registering key-recesses, molded keys in said recesses, anchor rods having their ends embedded in said keys and key recesses and supporting said walls laterally relative to each other, a molded wall between said concentric walls, and vertical stiffening rods arranged at right angles to said anchor rods for supporting all of said walls.

860,788. Grinding-Mill. William R. Cunningham, Bucyrus, Ohio, assignor to The American Clay Machinery Co., Bucyrus, Ohio, a corporation. Filed April 23, 1907. Serial No. 369,717.



In a grinding and mixing mill, the combination with a rotatable pan, and grinding mullers beneath which said pan rotates, of a hinged door at the side of the pan and opening outwardly therefrom, said door having fixed to it a scraper which is normally out of contact with the floor of the pan when the door is closed but which is moved towards said floor co-ordinately with the outward movement of the door.

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"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products Manufacturers will be held at Ottawa, Canada, November 19, 20 and 21, 1907.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

To much credit is more dangerous than to much money.

The more a man accomplishes the less time he has to talk about it.

How large the interest on a promissory note looks when you are paying it, and how small it looks when you are receiving it.

Subscribe today for the Clay Record. Do not wait until tomorrow: Tomorrow never comes. If you do not receive each year more benefit from the Clay Record than twice the amount of the subscription the money will cheerfully be refunded to you upon application.

There is no cure for Indigestion caused by being compelled to eat your own words.

There are two kinds of men—those whose clothes seem to have been made for them and those who seem to have been made for their clothes.

PLANTS CAN'T KEEP PACE WITH THE DEMAND FOR BUILDING MATERIAL

There is not a brick yard in Indian Territory manufacturing first class brick that can come anywhere near keeping its orders filled. This is because there is so much building in progress in most of the towns. Kansas has supplied brick for scores of big brick buildings in Indian Territory because they could not be bought nearer. Great brick plants have been erected in all of the larger towns, but even then they can scarcely supply the local demand, much less fill orders from small towns. In Muskogee, for instance, where there are large brick plants, contractors are short of brick every day. They stand around and with a long string of teams go to the plants and vie with each other to secure enough to keep their men at work. This condition applies to common brick, pressed brick and "pavers."

AMERICAN COMPANY WILL BRING TOTAL DOWN TO \$7,000,000—DIVIDEND DECLARED

Pittsburgh, Sept. 27—The announcement is made here that the capital stock of the American Sewer Pipe Co., has been reduced \$500,000 and that it is to be reduced further \$205,000, making the capital stock an even \$7,000,000. A dividend of 50 cents on the share has been declared, and it is intimated by those who should know that since the dissolution of the "agreement" in sewer pipe by the United States authorities the work of making sewer pipe has not been so profitable as before.

NEW USE FOR SHALE

The knobs west of New Albany, Ind., afford an inexhaustible supply of shale that has heretofore been extensively used in the manufacture of brick of a superior quality. Within the last few weeks the Goetz Brick Company has discovered another method of utilizing the shale that may be profitable, and should it prove to be so an important industry will spring up. The company has been grinding the shale to the fineness of flour, by means of special machinery built for the purpose, and two carloads of the product have been shipped, one to Chicago and the other to Milwaukee, where it is to be used for a number of purposes.

Another use has been found for the shale that may prove profitable. It is said that it contains 17 per cent aluminum, and experiments will be made by the Goetz Brick Company to ascertain if this valuable metal can be extracted in sufficient quantities to afford a profit for working it. Should this be accomplished, another source of revenue will be afforded, and the owners of these large deposits will not be dependent entirely on the manufacture of brick to utilize them.

OBITUARY

George Morrison, a brick contractor who formerly lived in Salt Lake City, Utah, died in San Francisco, Calif., where he had moved to regain his health. He was a native of England, born in 1862 and lived in Utah 28 years.

John F. Haas, Seneca Falls, N. Y., died at his home in Green street, aged 69 years. He was born in Germany and came to America forty-two years ago. For many years he was engaged in the manufacture of pottery at Seneca Falls.

Joseph Mayer, one of the best known potteryman in America, died at his home in Trenton, N. J., after a long illness.

ACCIDENTS, DAMAGES AND LOSSES

W. H. Hamilton has been appointed receiver of the American Pottery Supply Co., Baltimore, Md.

At the Sutton & Suderly Brick Co. works, Cocymans, N. Y., the clay bank slid down and ruined their steam shovel, resulting in a loss of \$3,000.

Mr. Mullaly of the brick making firm Mead & Mullaly, South Windsor, Conn., was injured while going home in his buggy by being run down by a Burnside car in Hartford Ave.

The buildings, machinery and property of the Utica (N. Y.) Pressed Brick Co., at Canastota, N. Y., were levied upon by the sheriff to satisfy a judgment of \$1,700 in favor of May S. Putnam of Utica.

The De Noyelles Brick Co. Haverstraw, N. Y., has obtained a permanent injunction against the West Shore Railway, restraining the company from using a drain to the damage of the De Noyelles Co.

Geo. J. Walter, owner of the Chatsworth (Ill.) Tile Works met with a painful accident while adjusting a car door, at the works, by falling from a ladder and injuring him so he will be laid up for several weeks.

The Pacific Clay Mfg. Co., Riverside, Calif., has commenced suit against C. W. Lord, H. K. Stahl and Fred M. Baird, of Corono, to secure an order rescinding the sale of a cluster of mines and asking the return of the money.

The Southern Brick Co., Little Rock, Ark. has commenced suits against Oliver LeMay, E. T. Collins, B. W. Green, R. C. Butler, C. Z. Wayman, G. W. Reaves and Lee Jaratt for promissory notes given in payment of stock.

W. F. Sadler, Jr. president of the Trenton (N. J.) Chamber of Commerce, is defendant in a suit brought by Jesse H. Smith, a retired farmer, who charges him with having sold to him stock in the Pennsylvania Clay Co., under false representation.

The McNeil Pressed Brick Co., St. Louis, Mo., works at Newbern, Ill. has filed its schedule showing assets of \$175,460 and liabilities \$65,832. In the assets are figured \$48,100 fire insurance which the unearned premiums only can be figured upon.

John Heffner has filed a \$20,000 damage suit against Van Loyd owned of the Farmersville (Ill.) Brick Works for picking up a shovel and striking him when he asked to be released from his employ. Heffner is in a critical condition in a Springfield hospital.

FIRE! FIRE! FIRE!

The Hiram Swank's Sons brick plant in the eleventh ward, Johnstown, Pa., was destroyed by fire causing a big loss.

The Hibbard Brick Co., Kearney, Nebr., suffered a loss by fire which originated near the gasoline engine and also ignited a gasoline tank.

The plant of the Barber Asphalt Company, at Indianapolis, Indiana, was destroyed by fire causing a \$30,000 loss. This plant is covered by insurance.

Fire completely destroyed the new sheds which were 85 x 160 feet, over the new kiln of the Smith Brick Co. at 22nd & Woolworth Ave, Omaha, Nebr. The loss is covered by insurance.

The entire plant of the Orange Grove (Miss.) Brick and Tile Co., was totally destroyed by fire. The loss is estimated at \$18,000 with only \$3,500 insurance. The plant is owned by Capt. O. T. Cassibry.

The foundry of the Henry Martin Brick Machine Mfg. Co. at Lancaster, Pa. was damaged by fire to the extent of \$5,000. The foundry will be rebuilt and enlarged to take care of the increasing trade.

The Arcadia (Ind.) Brick Works was damaged by fire to the extent of \$40,000. The insurance will not cover one-fifth of the loss. The factory is owned by Byron and John Hollett and Clifford G. White all of Arcadia.

Fire caused \$50,000 loss at one of the plants of the Illinois Brick Co., which is between Oak Glen and Lansing. The blaze was caused from a spark from the engine on the Pan-handle railroad. Fully insured and will be rebuilt at once.

LAWSUIT ON OVER MUNICIPAL BRICK PLANT

An interesting case has been before Judge Swan in the United States court in the suit of William Lucking, trustee for William Reich, bankrupt vs. Frank Reich, George W. Reutter, L. C. Wurzer, the City of Detroit, Mich. and Controller Doremus. Trustee Lucking is seeking to prevent the paying over to Frank Reich of \$5,000 in return for the work done in the partial construction of the municipal brick plant, alleging this money should be a part of the assets available for the creditors of William Reich. He asserts in his bill filed in the case that the contract was one really secured by William Reich, and the name of Frank Reich, his son, was used as a "mere blind" to hide from his creditors and that the senior Reich really did the work.

Attorney L. C. Wurzer is made one of the defendants on the allegation that he has a lien of \$500 on the \$5,000 for services performed in securing the passage of a bill in the last legislature that allowed the council to pay Reich for the partially completed plant, while the suit seeks to enjoin the controller from paying over the \$5,000 unless it is done under the order of the court to the estate of William Reich. The bill states that the contract was assigned to G. W. Reutter as security for loans for work on the plant.

W. G. Bush & Company, Nashville, Tenn., have recently installed a four mould Fernholtz Dry Press, made by the Fernholtz Brick Machinery Co. at St. Louis, Mo.

BURLINGTON GRANTS SPECIAL TARIFF ON BUILDING MATERIAL AT INSTANCE OF A COMMERCIAL CLUB

Splendid reductions in the rate on brick and artificial stone have been granted by the Burlington railroad upon continuous pressure from the Lincoln (Nebr.) Commercial club and Lincoln will soon have the rates it is entitled to have in this part of the state on these important commodities. Secretary Whitten of the club has made frequent requests for reduction in brick rates but General Freight Agent C. E. Spens has refused to grant them. Recently Mr. Whitten and J. H. Allen were on the point of going to Omaha to talk the matter over personally with the railroad officials when a letter arrived showing changes that had been made in the rates. The new rates granted by Mr. Spens are from one to two cents per hundred below the former rate and on the shipment of bulky articles like brick and tile this reduction will amount to a large sum in a year's time. The following table shows the former rate, the new rate and the rate from Table Rock to the brick using towns of the state:

Crete	3½	2½	4
Beatrice	4	3	3
Wymore	5	4	3½
Friend	4	3	5
Fairbury	6½	5	5
York	5	4	5
Hastings	7	5	...
Aurora	5	4	5
Kearney	7	6	...
Superior	7	5½	5
Blue Hill.....	7	5½	...
Seward	3½	3	5
David City.....	4½	4	...
Ord	8	7	...
Grand Island.....	6½	5	7½
Ravenna	7	6	...
Table Rock.....	5	3	...
Ashland	3½	3	4½
Schuyler	5	4	5
Sioux City.....	8½	7½	...
Omaha	5	3	4½
Plattsmouth	5	3	4½
Nebraska City.....	5	3	3
Tecumseh	4½	3½	2
Auburn	5	4	3
Falls City.....	6½	5	2½
Fremont	4	3½	5
Broken Bow.....	8½	7½	...

BEST YEAR OF ITS HISTORY

The Savage Mountain Fire-Brick Co. of Frostburg, Md., reports that for the fiscal year ended August 31, it completed the best year of its history. At the annual meeting of the company the present officers and directors were elected for the ensuing year as follows: President, Charles C. Gorsuch; treasurer, John A. Caldwell; directors, Chas. C. Gorsuch, H. C. Gorsuch, Arthur Baker, George W. Albaugh and John A. Caldwell.

PENITENTIARY BRICK PLANT

Convicts are now at work on the stockade for the brick plant at the United States penitentiary, at Leavenworth, Kansas. The plant will be one of the most modern in this section of the country and will be in operation early next year. The brick made will be used in the construction of the penitentiary and in the paving of the streets near the penitentiary. The first improvement of this kind will be the paving of Metropolitan avenue from a point west of the prison to Grant avenue.

SCARCITY OF POTTERS SUPPLIES

Manufacturing potters in the Ohio river district anticipate additional advances in raw materials before the end of the year. The record of the present years shows that raw material have gone up by leaps and bounds, ranging from 10 to 33 1-3 per cent.

While the Cooper's Association recently increased the price of packages, it is not being paid for by the pottery manufacturers, but by those who buy goods. In all instances, package charges are added to the bill of goods.

There is a scarcity of straw in the eastern markets, and prices before the year's end are expected to be higher on contracts than ever before. A few contracts are now being made by manufacturers for \$7.50 a ton, but many manufacturers have paid from \$7.50 to \$10 a ton for straw during the past year. The fact that boats have not been running regularly has caused a slight drain in the local market, but so far no real scarcity has been felt.

Recently an attempt has been made to introduce prairie grass for packing purposes, but manufacturers and packers have not taken well to the idea. So far none is being used. However, prairie grass at times is hard to get, and the quotations often are higher than that demanded for straw. This grass formerly came from the south and even from Michigan, but freight rates are such that it makes it an expensive packing material.

The prices of clays have advanced also. While many new clay firms are starting in the business in the south, they all maintain prices and this is not working to the advantage of the manufacturing potter to any great degree.

A NEW LINE OF DRYER CARS

The C. W. Raymond Company of Dayton, Ohio, are introducing to the claycraft, a new line of dryer cars of their own manufacture. It is well known that this company has for several years past been handling cars of other makes. They have spent nearly \$7,000.00 for new equipment to turn out this product in a strictly first class manner and with rapidity. Their equipment is modern, entirely new and ideal in every respect.

The Raymond Company have had excellent opportunity to study the requirements of their customers with the result that they are putting out a neat and attractive car and one which is up to the standard of Raymond productions. Judging from the illustrations sent us, the car certainly is a winner.

The Raymond Company have gotten out exhibit sheets giving the details of these cars, which they will be glad to send to any one interested.

METHODS OF SELLING MACHINERY IN EGYPT

Consular Agent E. A. Powell's report on commercial conditions in Alexandria, Egypt, concludes as follows:

The only way in which any real volume of machinery business can be had in Egypt is for the manufacturers, or an agent representing several first-class houses, to establish showrooms and shops in Cairo and Alexandria. He will have to guarantee every machine he sells, erect the same, and prove by trial just what its merit is, and then sell it on terms involving part cash and part notes. The purchaser of a machine must be able in case of accident or breakdown to get repair parts or "spares" as quickly as possible, and hence it is necessary for the agent to carry a considerable supply of these in stock. It is significant, in this connection, that the number of demands for licenses to work engines for industrial purposes is rapidly increasing. No less than 609 licenses were granted last year. The total number of engines in the country is now 6,447, of which 3,497 are used for industrial and 3,950 for irrigation purposes. There are over 90 sets of the Fowler (British) make of steam plow alone in use in Egypt, averaging in price about \$15,000 per set.

I understand that the Egyptian government has purchased the pottery manufactory at Foum-el-Khalig with the intention of developing and extending the industry which has proved a success and for which there is an ample field. It is also proposed to introduce into Egypt the manufacture of glazed pipes, sanitary and other goods which are now imported from England and France at very profitable prices and which there is every reason to assume can be as well made locally under proper European supervision. The saving of freight, packing, and breakage alone would show a margin of profit of at least 20 per cent. The demand for glazed pipes and similar goods has been rapidly increasing since the completion of the Assouan dam and must still further increase as soon as the drainage works at Cairo are commenced.

A large number of the perforated bricks so generally used for building purposes in Egypt are now being imported from Cyprus. These bricks are very light and are of great use in the upper stories of houses. Up to now they have been imported from France, but it is expected that a large trade in them will shortly be developed with Limassol, for, owing to the cheap freights by sailing craft from Cyprus to Alexandria, the Cypriotes will be able to successfully compete with European manufacturers.

BRICK CLEANED WITH COMPRESSED AIR

The work of cleaning the brick on the lower stories of the Lonsdale building at Duluth, Minn., is causing large crowds to gather at Third avenue east and Superior street to watch the process. On a hanging scaffold high above the sidewalk three men operate the compressed air hose which blows the dust and drift off the brick.

Three stories were added to the Lonsdale building this summer and the brick on the lower stories are so much darker than those on the additional stories that it was decided to clean them. The sand from the brick is blown about the streets and falls in heaps on the sidewalks.

The compressed air system of cleaning buildings has been used in the east for many years, but this is the first time that a Duluth building has been so treated.

CLAYS IN MANCHURIA

Consul Fred D. Fisher, of Harbin, sends translations from a Russian newspaper on the deposits of clay and cement and other joining materials, which exist in large quantities in Manchuria:

Fire clay is found along the banks of many mountain streams and is very useful for the finest chinaware, being pure white. There is also a light yellowish or reddish fire clay which exists in large quantities and can be utilized for fireproof material. Fusible clay, which is soft and in an admixture with water is highly plastic and easy of dissolution, is of great value in removing grease spots, and can also be used as cloth-rolling clay. Brick clay, which is the most common variety, is used extensively for building purposes, especially in Harbin and the surrounding towns. Along the Sungari and Nonni rivers there are many deposits of sandy and blue clays, and in the sandy varieties are found gold leaves. In addition to other clay-silicic compositions deposits of lime marl are found, also rotten stone, which is valuable for the manufacture of dynamite, crystal glass, and enamel, and for polishing and cleaning.

The principal joining materials used in structural work on the local markets of Manchuria are lime, hydraulic lime, gypsum, Roman cement, and Portland cement. Limestone is found along the Ashehe and Syaolin ridges and in the southern portion of the Shihote and Alinia ridges, where it is of comparatively recent origin, very grainy, and light, often containing a considerable mixture of sand and clay, and is suitable for the manufacture of hydraulic lime. Crystalline limestone, having somewhat the appearance of marble, is found in the Lao-Lin ridge. The most important of all joining materials is Portland cement, which is made by burning until the lime or the mixture of clay and lime is thoroughly baked, after which it is pulverized. Roman cement is made by burning at a low temperature. It does not slack by wetting and is easily pulverized by machinery. Although there is an abundance of lime marl in Manchuria, there is no production of such cement in the Russian Far East. Gypsum, in connection with anhydrite is found in large quantities near Fenghuancheng, Mergen, and Saimatsi, and is usually accompanied with sulphurous ore evidently of secondary formation. The gypsum near Saimatsi is of a compact, hard, grainy nature and resembles alabaster. Some of the Manchurian gypsum contains about 6.20 per cent of iron oxide and iron pyrites, which does not by any means decrease its value in making joining material. [Copies of the translations in question are on file in the Bureau of Manufacturers containing detailed information concerning the chemical analysis of the clay and cement referred to.]

BLUE SPECKLED BRICK

Tests were made of yellow shale clays which underlie the great Kaolin beds at O'Quinn, Texas, for dry pressed brick. The brick have the color and appearance of cork but are nicely speckled all over from a metallic substance which melts at a low degree of heat and makes brilliant blue spots. They look very pretty, and I think they will remain so, because they are self-glazed.

Can any of your readers tell me what mineral this is? Will the blue specks injure the sale? J. C. MEELER.

HOW THE DOUKHOBORS MAKE BRICK

The Doukhobor brickyard at Yorkton, Sask., is on a large and elaborate scale, and under the supervision of M. W. Cazakoff, the foreman, an experienced brickmaker promises to become a most important industry. The plant cost \$50,000. A 50-horse power steam engine supplies the motive power and six men and two boys are required to operate it and the brick-making machine, one of the newest and best on the market, imported especially from the United States. The entire establishment is run by Doukhobors and unlike any other modern industry, no wages are paid. The proceeds from the sale of the brick go into the treasury of the community and the community supports the workers. This plant has a capacity of 50,000 per day, but is seldom run to the full capacity. The brick are then placed on palets and these are placed on endless drawn by excellent horses, draw the earth up an elevated wooden roadway and dump it into the machine. Here it is automatically mixed up, an automatic sprinkler supplying the water, and the brick come out six at a time. They are then placed on paletes and these are placed on endless wire cables and carried into the drying shed—a huge affair 300 ft. by 50 ft, with a metallic roof—where men are stationed at different points to lift them on to the wheelbarrows and wheel them to the racks where they are placed to dry. When they have become sufficiently dry they are again placed upon the cables and taken out through the end of the shed and put into kilns and burned. They are at present burning their first kiln. Next year they propose doing away with the carts and using a steam shovel instead. They will also erect another drying shed the present one being altogether inadequate. Another innovation worth mentioning is a large 10,000 gallon cement tank, underground, to which all the rainwater off the sheds is drained, to be used in the steam engine. A large cement-block engine house is at present being built around the engine, the top story of which will be used for sleeping quarters.

At present the 28 men, 20 boys, and 3 women in the colony sleep in tents. This brickyard is a constant source of interest to visitors, who pronounce it one of the finest and most complete in Canada.

Besides the Doukhobor industry Yorkton has also a brickyard owned by C. T. Erickson. The capacity of the two combined is 75,000 brick per day thus making the town a centre for the manufacture of brick.

SCHWARZ SYSTEM NOW CONTROLLED BY A NEW COMPANY

The Sand-Lime Brick Plant Company, with offices at 20 East Forty-second Street, New York City, has been organized to take over the "Schwarz Scientific System" for the manufacture of sand-lime brick plants. The president of the new company, S. F. White, M. E., is a graduate of Stevens Institute and has for a number of years been prominently identified with the sulphur industry. Plants for manufacturing sand-lime bricks by "Schwarz Scientific System" have been manufactured for a number of years, and many of them are in successful operation in various parts of the country.

POTTERY NEWS ITEMS

The Keystone Pottery Co., Crooksville, O., has been incorporated with \$30,000 capital stock. Incorporators are W. N. Burley, Z. W. Burley, J. G. Burley and Wilson Winter.

The A. E. Hull Pottery Co., Crooksville, O., increased its capital stock from \$50,000 to \$150,000, by A. E. Hull, president and W. Watts, secretary.

Plant No. 3 at Macomb, Ill., of the Western Stoneware Co., known as the Blount Pottery Co. has been started up again.

The large agreement of the United States Potters association expires Oct. 1st, and a conference has been held in New York, which lasted four days and resulted in extending the agreement for an additional two years.

The stockholders of the new pottery for Augusta, Ga., are holding important meetings and the stock is being subscribed very liberally. The plant is assured.

The American Pottery Supply Co., Baltimore, Md., will rebuild their flint mill at Deer Creek, Md., which was burned some time ago.

The Gem Clay Burning Co., Sebring, O., are hustling their plant along anxious to get into running order as orders for their product are piling up.

The Central Porcelain Works in New York Ave., Trenton, N. J. were sold by sheriff sale to Lawyer Linton Satterthwaite. The consideration was \$8,270.58.

The Topeka (Kansas) Commercial Club is in correspondence with eastern pottery manufacturers with a view of establishing a pottery there.

Robert Campbell of East Liverpool, Ohio, a practical potter of many years experience is at the head of a project to found a pottery city near Atwater, 10 miles southeast of Ravenna, Ohio.

The Warwick Pottery Co., Wheeling, W. Va., expects to have its new department at the corner of Alley 18 and the river in operation within a month.

The Harley Pottery Co., Nashville, Tenn., will soon erect a large pottery plant. It having been already decided but the location has not been absolutely agreed upon. Mr. Harley will settle the matter within a few days.

The Phoenix Pottery Co., Mannington, W. Va., has been incorporated with \$125,000. The office is to engage in the pottery industry.

A bill has been filed by Andrew Cochran to compel the Globe Pottery Co. of Bordentown, N. J., to preform an agreement alleged to have been made by which the company was to pay all debts of The Ironsides Pottery Co.

The E. E. Spencer Porcelain Co., Monmouth, Ill., has been incorporated with \$10,000 capital stock by George McPortle, Benjamin Wolf and William S. Brothers.

A company of local men will rebuild the pottery at Ft. Dodge, Iowa, that burned to the ground and was owned by the Western Stoneware Co. of Monmouth, Ill.

Carl J. McQuilken and J. J. Curry, East Liverpool, Ohio, have built a porcelain pottery works in the west end, opposite the West End Pottery Works. The plant will have a two kiln capacity at first.

Mr. Daniel Zehnder of Easton, Pa., has placed his order with the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., for an outfit of "Martin" Brick Machinery, and the "Martin" Patented Rack Pipe Steam Brick Dryer System.

SAND OR LIME BRICK OR BLOCK NEWS

J. L. Weir, Lestershire, N. Y., has constructed a cement brick making plant on the south side.

The Denbigh (N. Dak.) Brick Works is now turning out an excellent product of sand-lime brick.

The big warehouse of the Menominee (Mich.) Sand-Lime Brick Co. has been completed and the works is making up stock to store.

The Enamel Concrete Brick Co., Des Moines, Ia., are contemplating spending \$25,000 for the erection of a Des Moines plant.

George E. Dungan, receiver for the Daleville (Ind.) Sand-Lime Brick Co., was ordered by Judge Leffler to dispose of the property in order to settle the accounts of the firm.

The Durico Sand Lime Brick Co., Saco, Maine, has been incorporated with \$125,000 capital stock. The officers are J. C. Smith, president; H. S. Sawyer, treasurer.

The Indianapolis (Ind.) Composite Brick Co., have completed financial arrangements for the purpose of increasing the capacity of their plant.

The Sand Lime Brick Plant Co., 20 E. 42nd St., New York, N. Y., has been organized and has taken over the business of the Schwarz Scientific System, the president of the new company is S. F. White, M. E.

The Hummelstown (Pa.) Brownstone Co., has recently completed their sand-lime brick plant. Also a large crushing and screening plant. In this plant the quarry spawls are crushed and made into brick, which are of a beautiful brown color.

The factory of the San Antonio (Texas) Brick Co., at Sherman and Pine Streets is rapidly being completed. The factory will have a capacity of 40,000 sand-lime brick daily.

J. A. Kennedy of Post Huron, and Eugene Lewis and Emil Menzer of Marquette, Mich., are organizing a \$50,000 company to make sand cement brick at West Duluth, Minn. The McIntosh Automatic System will be used.

The Independence (Ia.) Cement Tile & Block Co., has been organized with \$50,000 capital stock. Its buildings will be erected on the railway grounds near the Illinois Central depot.

The concrete Block & Brick Co., Marion, Va., will establish a plant to make cement blocks and sand brick. A. F. Redford is president; J. E. Dickensen, treasurer; R. H. Phipps, secretary, and R. Kelly, general manager.

The Intermountain Cement & Brick Co., Idaho Falls, Idaho, have a large force of men at work building their sand-lime brick factory which will utilize the sand taken from the Snake River. The equipment will be very modern.

Sidney and E. J. Grant of Brooklyn, N. Y., are building on the shore of Gravesend Bay between Bay 46th and Bay 47th streets a sand-lime brick plant 80 x 200 feet, steel construction. Same will be in operation within 60 days and will cost \$140,000.

The firm of Phillips & Bartlett, Deadwood, S. Dak., have decided to rebuild their brick manufacturing plant on White-wood creek above Deadwood. The new plant will have a much larger capacity than the one that burned down and will be built on the opposite side of the road.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal floor line of the ordinary continuous kiln, the arch only being built above this line.

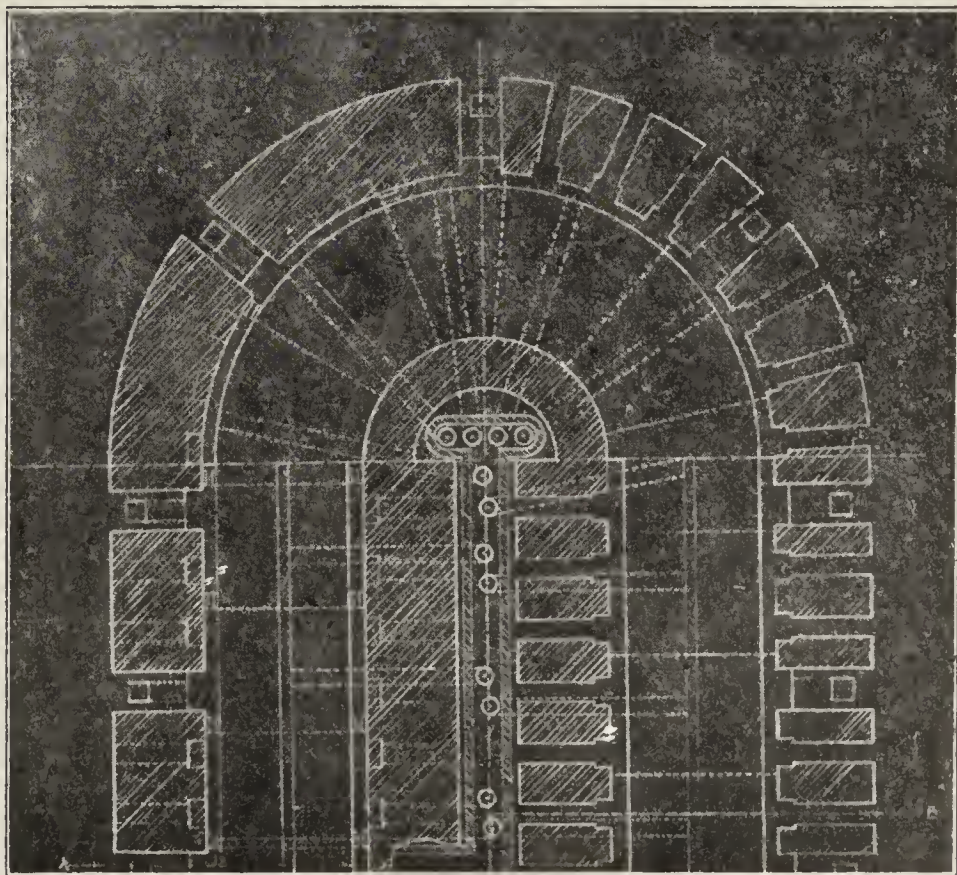
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

MISCELLANEOUS ITEMS

Patrick J. Lynch, of Lynch Bros. Brick Co., Holyoke, Mass., has announced his candidacy as an alderman.

The Junction City (Ohio) Clay Products Co. has increased its capital stock from \$60,000 to \$80,000.

The Lombard (Ill.) Brick & Tile Co. has bought 25 acres of land at Elmhurst and will enlarge their stone quarry.

The Brainerd (Minn.) Brick Co. has its first kiln of brick ready for the market. They are very satisfactory to the owners.

The Ohio Fire Brick Co., Wellston, Ohio, has been incorporated with \$50,000 by W. B. Cherrington, B. F. Howland, J. M. Petridge, J. M. James and E. B. Bingham.

Red Wing, Minn. capitalists have secured land near Ft. Dodge, Ia., and will build a large sewer pipe works to be a rival to the new Plymouth Clay Product Co.

Lumber has arrived for the brick plant at Carlisle, Kansas, brick plant, also for the Lumberman's Portland Cement Co's. plant.

The Western Clay Mfg. Co., Helena, Montana, is experiencing great difficulties by not being able to get coal with which to burn their wares.

The Manteno (Ill.) Brick Co., in a regular run on September 6th, turned out 105,000 brick in four hours, a ten hour run at this rate would make 262,500 brick.

The new brick plant of the Columbus (Ohio) & Hocking Coal & Iron Co., is now in operation. Fire was started under the gas producers last week.

W. C. Pooley, formerly superintendent of the Bienville (La.) Water Supply Co., has opened a plant on Wilkinson Street to manufacture brick.

The Weir City (Kan.) Brick Co. will make several new improvements in the near future. They will put in a new drying house and some more kilns.

The Isthmian Canal Commission, Washington, D. C., will receive sealed proposals until October 21st, to furnish all kinds of supplies among them being a call for fire brick.

Straight Bros., Fonda, Iowa, have taken a 60 days' option on a tract of land and if same tests satisfactorily they will built at Auburn, Iowa, a large tile plant.

The rebuilt plant of the Defiance (O.) Tile Mills Co., has commenced operations, and are now employing a good sized force.

John J. Terrall has purchased an interest in the brick and tile works, at Emmetsburg, Ia., and has moved to there from Reinbeck.

C. B. Allen, 14 Carhart Ave., Binghampton, N. Y., has bought 204 acres of land at the end of Broad Ave. and will open up a large brick yard. He will make a tour of the large cities and inspect the brick plants.

The W. A. Close Trading & Mfg. Co., Matawan, N. J., has been incorporated to manufacture brick and tile. Incorporators are W. A. Close, Chas. E. Close and Hannah T. Close, all of Matawan, N. J.

Edward Nicholson, the pioneer Steubenville, Ohio, brick-maker has sold his west Market Street brick yard to Joseph and Harry Nicholson, who have taken charge and will continue the manufacture of brick. Mr. Nicholson will spend the winter in California.

J. H. Berry, Winnsboro, Texas, and associates will erect a pressed brick plant.

The Redfield (Iowa) Brick & Tile Co. will enlarge its factory.

After a three years suspension the Lickdale (Pa.) Tile Works has resumed operations.

The McCook (Nebr.) Pressed Brick Co., have installed a 20,000 capacity Fernholtz Dry Press in their plant.

Charles Carey formerly with the Fairmount (Ind.) Tile Co., has moved to Summitville where he is the assistant manager of the plants of the National Drain Tile Co.

Jason Densmore has sold his brick business at Lebanon, N. H., to his sons, Alfred J. and George A. Densmore, who have already taken possession.

Blue prints of a proposed tile plant have been made and are now on exhibition by H. E. Baxter of the Natchez (Miss.) Freight & Credit Bureau.

The Stockport, Iowa Tile Works will be rebuilt at once, a company has been formed and work will be pushed to completion as fast as possible.

The Bessemer Limestone Co. Youngstown, Ohio, has secured contract for the sale of 4,000,000 brick which will be used in the construction of the Hudson River tunnel.

On account of a boycott declared against the Cleveland Brick Co. of Oklahoma City, Okla., the brick layers Union refuse to lay the brick of the company which has orders out for over one million brick.

A. W. Schone, Milbank, S. D., has an experienced brick maker examining the clays found near there and will endeavor to interest parties and organize a company for the manufacture of brick.

The Whitestone Silica Fire Clay Co., Jersey City, N. J., has been incorporated with \$100,000 capital stock. Incorporators are, Robert Goodbody, Haledon, N. J., G. A. Coates, 655 E. 26th St., Paterson, N. J. and Mareno Goodbody of Tenafly, N. J.

K. B. Grahn, the president of the Louisville (Ky.) Fire Brick works, who was so seriously injured by being run down by L. & N. train the latter part of August has sufficiently recovered to be able to be removed to Lake Toxaway, N. C.

Arrangements have been made for the transfer of the coal mines of the Youngstown (O.) & Southern Co., to a company represented by E. E. Biddeson former state mine inspector. The new company will operate the mines on a large scale and build a brick and tile works to use up the fire clay which underlies the coal.

The Delaware Terra Cotta Co., of Wilmington, Del., who recently installed the "Martin" Patented Rack Steam Pipe Brick Dryer System on their plant have now placed their order with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for an additional 20,000 capacity "Martin" Dryer.

Messrs. Jos. H. White & Sons, of Easton, Md., are at the present time installing a complete equipment of Martin Brick-making machinery of 20,000 daily capacity, including the "Martin" Patented Rack Steam Brick Dryer System furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

Montrose, Colo., is to have a new \$25,000 pressed brick plant.

The Theriault Red Brick Co., Tilden, Wis., has filed a notice of dissolution.

J. S. Davis is interested in the establishing of a brick plant at Winsborne, Va.

F. R. Cooper, Clinton, N. C., is interested in the establishing of a brick plant that will have a daily capacity of 20,000 brick.

The Nicholson Brick Co., Steubenville, Ohio, has been incorporated with \$35,000 capital stock by Geo. W. McCook, P. McFadden, Harry Nicholson, H. Brister and J. B. Nicholson.

The Latrobe (Pa.) Brick Co., is now enjoying a season of unprecedented prosperity, the company has just secured a contract for 1,500,000 brick for the St. Joseph Academy at Greensburg.

The Alexis (Ill.) Brick & Tile Works has been sold to a party of men from Little Rock who expect to put the plant in first class condition and operate it at its fullest capacity.

Mr. Wm. Kelley of Philadelphia, Pa., is putting in an equipment of "Martin" Improved Style "A" Machinery on his Frankford yard, installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

The Independent Press Brick & Tile Co., Carrollton, Texas, will erect a plant costing \$95,000 and making 100,000 brick daily plans are now made. The president of the company is W. H. Moser, vice-president, Geo. B. Dobson, Galveston, secretary and treasurer, Joseph F. Kehoe.

Bernard O. Mecklenberg has bought 1,500,000 brick from the Kaysville (Utah) Brick Company for use in the buildings whose erection he is supervising.

Fine beds of fire brick clay have been discovered within seven miles of Nooksack, Wash., and an effort is being made by local parties to establish a modern plant for the manufacture of both brick and tile.

L. E. Bennett, of Millsap, Texas, has had samples of brick made from Brownwood shale which have proved to be very fine and he will organize a company to build a plant that will make both paving and building brick.

Smith & Peacock of Austin, Texas are putting in the side track and machinery for the manufacture of pressed brick at a point five miles north of Milano on the G. C. & Santa Fe Ry.

The Gifford (Mo.) Brick & Tile Co., has been incorporated with \$8,000 capital stock by J. G. Magers, H. D. Robinson, H. C. Surbeck, Thomas Miller, James Neet and others.

It is reported that several parties have secured options on 20 acres of land from Henry Hershey and Franklin Sprengle near Spring Grove, Pa., for the purpose of erecting a large brick making plant.

The Fitchburg Brick Co., Fitchburg, Mass., have just installed one of the latest "Martin" Style "P" Compound Disintegrators on their yard, this Disintegrator being the best and most modern of any machine of its kind on the market, and which is built by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

DIRECT HEAT

DRYERS

FOR

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
Brick and Tile Machinery
Secor, Ill.

FOR SALE

One Quincy Clay Gatherer and Plow. Brand new, in use only two weeks. Address,
Elk City Brick Co.
Elk City, Kansas.

FOR SALE

One power Répress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.
American Enameled Brick & Tile Co.
1 Madison Ave. New York

A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA

WANTED—Manager and Superintendent who can introduce capital to equip a complete Brick making plant on my clay field, of 60 acres, proved at 40 feet and analyzed by The Henry Martin Brick Machine Mfg Co., Pa., U. S. A., who recommend using the following outfit: Martin Style "P" Disintegrators, and Style "A" Brick Machine for Moulding, and the Martin Steam Brick Dryer.

The situation of the field is close to the railway siding of Claysmore, on the C. N. R., 6 miles from Vermilion City, the bull's-eye of the famous Saskatchewan Valley, and the Vermilion District, where bricks are now selling for \$20.00 per thousand and great demand at that. Address,

ALEXANDER EASON,
Pioneer Builder and Contractor
Vermilion,

N. W. Canada

Alberta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York.

50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
131 Lander St., Newburgh, N. Y.

WANTED

Superintendents, Managers; Experts, also office and Salesmen with brick, tile, pipe, or building material experience. Write,
HAPGOODS,
305 Broadway, New York City, or
1010 Hartford Bldg., Chicago, Ills.

FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address
LOCK BOX 29 CARE OF CLAY RECORD
Chicago, Illinois

BRICK YARD FOR SALE

Old established yard in good town of 5,500 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address
CHARLES MCNEAL
Maryville, Mo.

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address
GEORGE BARNEY,
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WANTED

Wanted Stoneware Potter—both wheel and Kiln men. Write to
SPOKANE POTTERY CO.
Clayton, Wash.

WANTED

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment.
Address: B. C., care Clay Record
Chicago, Ill.

MEN WANTED

Three (3), or four (4) good brick handlers, also two (2) brick kiln fireman, good pay and steady work for the right men. Address:
Supt. Missouri Slope Brick and Tile Co.
Dickinson, N. D.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 15, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.
L. T. LEE, Zenith, Ga.

FOR SALE

Clay Disintegrator, new \$50.00; Tempering Wheel used only two seasons \$15.00.
C. EUGENE KEMP
306 Locust St., Williamsport, Pa.

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to
BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
Redfield, So. Dak.

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

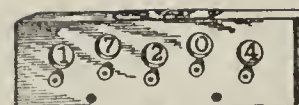
CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address
DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address
J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Joggers quoted.
R. A. HART, 41 White St.,

No better made, cut from \$8 and \$10, to
4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.
Sold by all dealers.
BATTLE CREEK, MICH

MEN WANTED

Six men experienced in Hollow block manufacturing, highest wages; no labor trouble. Apply to
605 Diamond Bank Building | Ohio Clay Products Co.
Pittsburg, Pa. | Salineville, Ohio.

BUSINESS WANTED

I can sell any business or real estate that is salable, no matter where located. I reach the people who buy. A trial will convince you. Established in 1881. If you want to buy or sell, address,

FRANK P. CLEVELAND,
1726 Adams Express Building
Chicago, Illinois

FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete, 50,000 vitrified brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant.

LIBERAL BRICK & TILE CO.
Liberal, Mo.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,
Care Clay Record, Chicago, Ill.

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.
BAKER IRON WORKS
Los Angeles, Cal.

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.
Box 81.
Independence, Iowa

GAS ENGINE FOR SALE

FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gasonieter, in good condition. Let go cheap if sold at once. Answer,

Gas Engine, care Clay Record
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BRICK PLANT WANTED

At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacents. Plenty of artesian water. For information address:

WENONA COAL COMPANY
Wenona, Illinois

FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.
Sandusky, Ohio

FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Re-press, practically new.
BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

79 Chamber of Commerce,
Astoria, Oregon



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Single Copies, - 10 Cents

THE TESTING OF GLAZED CLAY-WARE *

By John W. Cobb.

If a clay or mixture of clays alone or with other minerals is moulded into any desired shape, and then hardened by fire, clay-ware is obtained. If this ware is covered wholly or partly by a vitrified coating run and fixed by fire, the product is glazed clay-ware; the term therefore includes nearly all pottery and many building materials. Experience indicates that there are many degrees in the resistance offered by glazed clay-ware to destructive agencies, and it may be of interest to consider how far it is possible to determine the excellencies and deficiencies of this material before using it. The glazed brick may be taken as typical of glazed clay-ware in general, on account of its simplicity in shape and structure. It contains the elements of glazed clay-ware in their simplest combination. A normal glazed brick consists of two essential parts: first, the brick itself, tough, hard, chemically resistant, more or less porous; and second, the glaze above it, smooth, non-porous, chemically resistant, more or less bright and transparent. If the glaze is transparent, the color of the glazed brick face is often given by another coat between the clay and the glaze, but if the glaze is opaque, it carries its own color. On the advisability of knowing the resisting power of glazed brick before putting them into use little need be said. The contrast between the fine and uniform surface of a good glazed brick wall and the patchy unsightly appearance of a bad one is very striking, and is nearly always due to the quality of brick used when the wall is built.

The questions that suggest themselves are:—What are the influences tending to cause deterioration in such a piece of glazed clay-ware as a glazed brick, and how do they affect the brick, the glaze, or the glazed brick as a whole? How is the glazed brick to be tested in the office or the laboratory as to its power of resistance (paying particular attention to such tests as may be made without special laboratory appliances), and what results are to be expected from the tests applied?

In the first place, it is plain that anything which happens to destroy the complete soundness or wholeness of the brick itself, to make it crumble or crack, at any rate near the face, is bound to result in a breaking away of a portion of the glaze, and the ruin of the glazed brick in appearance and utility. Hence, little consideration is required before concluding that a degree of excellence, in the sense of complete soundness, which would be quite sufficient for an unglazed

building brick, even a high-class facing brick, may be quite inadequate for a glazed brick of which so much is demanded. This is found to be the case. The most perfect glaze cannot save the imperfect brick, for the glaze is such a delicate indicator of the perfection or imperfection of the clay it covers.

The agencies likely to do harm may be considered in the following order:—Frost, crystallisation in the brick and efflorescence from it, dirt suspended in liquid or in the atmosphere, corrosive liquid or vapor, pressure, change of temperature, scouring, and percussion.

FROST AND CRYSTAL FORMATION.

The bad effect of frost is generally understood to be due to the force of expansion of water in freezing, to which any brick walled damp, or in a damp situation, is particularly exposed. Alternate freezings and thawings are to be resisted if harm is not to follow. With respect to crystal formation and efflorescence, the disintegrating force is the formation of crystals in the interior of the brick. The material for the formation of such crystals may have several origins.

“Mineral incrustations are mostly white or greyish, more rarely yellow or green, these latter being due to vanadium. In appearance the incrustations vary according to the solubility of the component salts, from floury or woolly powders to stalactitic masses, and may result from various causes, present either in the raw clay, or introduced in the water employed in brick-making, or from pyrites in the clay or fuel, or from the ash of the latter material. Again, the infiltration of soluble substances from the mortar or combination of the alkalis in the latter, with the gypsum in the bricks, or, finally, the absorption of nitrates from the soil, and ammonia or sodium chloride (near the sea) from the air may give rise to incrustation.”—(Günther, J. Chem. Soc., 1897, p. 331.)

The disruptive force of freezing water is easily understood, since the water is both expanding and crystallising; but why the formation of crystals should be in itself a disruptive force, when no expansion takes place during the crystallisation, is not very easy to see. It seems quite clear, however, that the crystallisation can do the damage even when not accompanied by an expansion. My own experiments, inducing very complete disintegration, were made mainly with sodium thiosulphate, $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$. I thought that the disintegration was due to expansion, but Dr. Dawson, of Leeds University, has made tests which show that the crystallisation of $\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$ is not accompanied by expansion. The specific gravity of a solution of thiosulphate expressed by the formula, $\text{Na}_2\text{S}_2\text{O}_3 \cdot 7\text{H}_2\text{O}$, at 20 deg. C., compared with water at 4 deg. C., was found to

* Reprint from the Journal of the Society of Chemical Industry.

be 1.673; that of the solid crystals, 1.750. It seems, therefore, as if there is a force, perhaps somewhat akin to surface tension, which, by tending to secure continuity in the crystal form, enables the growing crystal to displace adjacent matter, and so to exercise a disruptive action on any material enclosing it. The results obtained leave no doubt as to the reality of the force and its effectiveness. They suggest as a general inference that much of the natural disintegration of rocks, which is put down to the expansion of water in freezing, may really be more dependent on the force of crystallisation of ice. The effect of freezing or crystal formation on the brick is to loosen its whole structure, and to make it rotten and incapable of withstanding the pressure of other forces acting upon it, be they chemical or mechanical. The crystals may effloresce on the outside of the brick where unglazed, and the brick itself is often crumbly and rotten underneath the efflorescence. The direct effect on the glaze is usually trifling, unless the crystals are formed from the decomposition of the glaze itself. This is considered below under "corrosive agents." Indirectly, however, the effect on the glaze may be great, and that on the glazed brick as a whole disastrous. The freezing water or growing crystals cannot come through the non-porous and inelastic glaze, but they often crack it, snip it, or lift it bodily from the brick it covers. Examination of a wall of bad glazed brick which has seen service will often disclose the working of this agent, especially in those courses near the ground, which are most liable to be damp. An efflorescence will sometimes be found on the face of the brick where the glaze ought to be, or underneath a lifted glaze. If for any reason the glaze and the brick are not suited to one another, and so do not cohere firmly, then the spoiling is facilitated. Underground work is most liable to show these defects. It is possible to test the liability of a brick to disintegration by the alternate freezing and thawing of water. It is, however, very much simpler to test the liability to disintegration by internal crystal formation.

CRYSTALLISATION TEST.

A glazed brick is placed, glazed face downwards, in hot water saturated with sodium thiosulphate, in such a way that an inch depth of brick is immersed. After soaking the brick is cooled completely in the open air, to allow crystallisation of the salt, and the soaking and cooling are repeated as often as may be necessary. A bad glazed brick begins to crack on the glazed face, and to soften and flake in its substance, after a few alternate soakings and coolings, a good one only after many, and so a decided difference is manifested between the good and the bad brick tested side by side. Probably in the vast majority of cases, if not in all, resistance to the crystallising test and to the freezing test, is the property of the same brick, so that the freezing test is not necessary if the crystallisation test is made.

Fig. 1 shows a very poor glazed brick which was submitted to me for testing. After a few alternate soakings and coolings its condition was bad, and after allowing to stand for a time, atrocious. Coming to bricks of a better class, the effect of testing is not so ruinous. As seen in Figs. 2 and 3, cracking, sometimes interestingly symmetrical, and local or general shelling away of the glaze, are the usual results. If there is a tendency to "crazing" it is displayed by the formation of a network of cracks, or a few long-line cracks. I do not think it practicable to lay down a rule that the brick should stand so many alternate soakings and coolings without injury, because the exact conditions as to temperature, cooling, etc., are not so easy to get every time. The test is essentially comparative, and I believe it to be the most useful single test in the whole range of tests. The crystallisation test gives comparative results quickly, that is in a day or so, and is useful on that account. If a brick which has been subjected to it is exposed to the weather afterwards, the dire effects of the internal crystallisation and efflorescence

are much more manifest, as can be seen in Fig. 4. This was photographed from brick tested in the same way, and to about the same phase of destruction, as those shown in Figs. 2 and 3, but afterwards exposed to the weather for three months. The destruction is complete in the case of nearly every glazed brick, excepting the salt-glazed. One result of the tests made as above, is to show that the ordinary brown salt-glazed brick (when it has been really made by applying salt vapor, and not simply dipped in a brown glaze and burnt like an ordinary glazed brick) is one of the most indestructible of brick. Another result is to show that a dense unglazed brick burnt to a light chocolate shade, may be very little affected by the crystallisation test even when exposed afterwards to the weather. No doubt this is due to the fact that, since it absorbs so little water, very little actual crystallisation can take place within it; the results justify the value placed upon such a brick for engineering purposes. It might then be thought that the less water a glazed brick could absorb the better it would resist the crystallising test, but apparently other variations are of much greater consequence in glazed brick, for in my own experiments there has been no relation found between the porosity of the glazed brick and its resistance to the crystallisation test. The determination of porosity or water absorption may be advisable for other purposes, however, and is easily made.

POROSITY DETERMINATION.

The brick is first dried, unless it is known to come straight from the kiln, and weighed; the drying may be done on an iron plate directly above a gas burner. It is then placed in water for twenty-four hours, with one unglazed face just above the water surface, to allow the air to come out and the water to enter with ease. For a few minutes at the end of the soaking the brick is completely immersed; then it is removed, drained for five minutes, wiped over quickly to remove externally adhering water, and weighed again. The increase in weight is a measure of the porosity.

It is interesting to note that, as a rule, bricks made by the so-called plastic process, in which the clay is mixed with an excess of water, seem to stand the crystallising test better than those made by the other processes in use, the semi-plastic and dry, in which less water is used, and greater pressure is used to thoroughly bind the clay. Such a result is not surprising if we realize the effect of adding an excess of water. In the first place, the very finely divided portion of the raw clay is thoroughly wetted. It can assume a sort of colloidal state, and so surrounds all the grosser particles with a sort of slime. On drying, the slime becomes a binding element, which has its effect in the production of a very sound brick on burning. In the second place the excess of water helps greatly to secure the absence of air in the mass of moist clay. If air is present, then on pressing the brick it is obviously liable to be spread in air films or cushions between the grains of clay; and so to prevent soundness and continuity of structure in the finished brick. Unsoundness so produced is very different from the fine and uniformly distributed porosity which results normally in drying and burning, from the shrinkage of every particle of clay in the brick on its own center. When, on subjecting to the crystallising test, a continuous air film is replaced by one of liquid in which crystallisation occurs, the disruptive effect is likely to be considerable.

LIABILITY TO EFFLORESCENCE; ESTIMATION OF SOLUBLE SALTS.

The crystallising test shows the extent to which a glazed brick can resist the disintegrating effect of an efflorescence, but does not show in any way the liability of a brick to efflorescence on account of the soluble salts it contains. A chemical test of the quantity of the soluble salts is necessary for that, and can be made as follows: Portions of one brick, or better, of several brick, are broken up to about pea size,

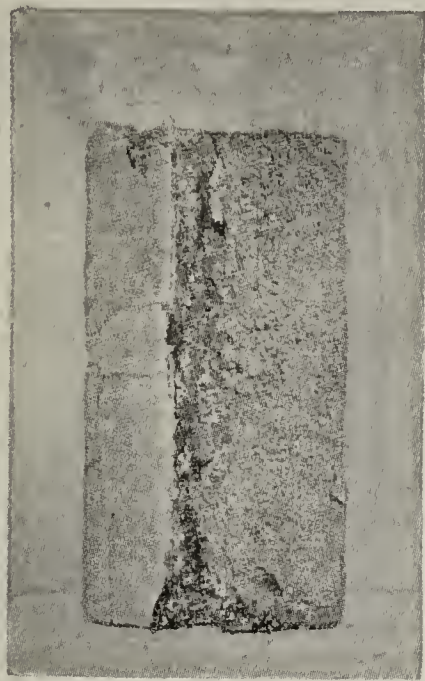


FIG. 1.
Bad glazed brick after crystallising test.

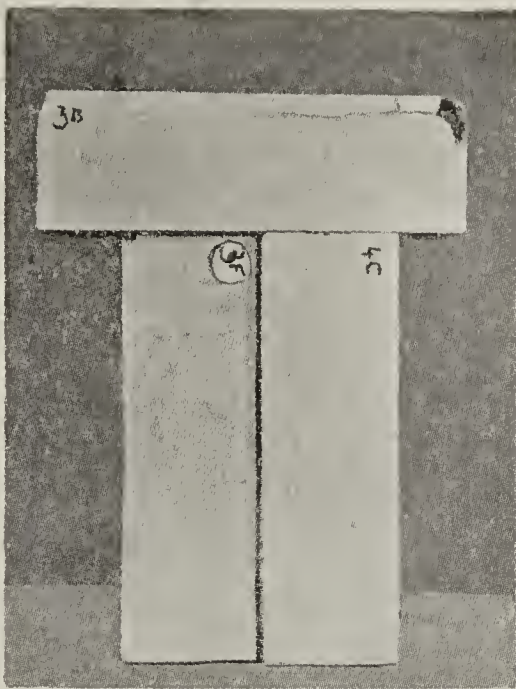


FIG. 3.



FIG. 4.
Glazed bricks after crystallising test and three months' weathering.

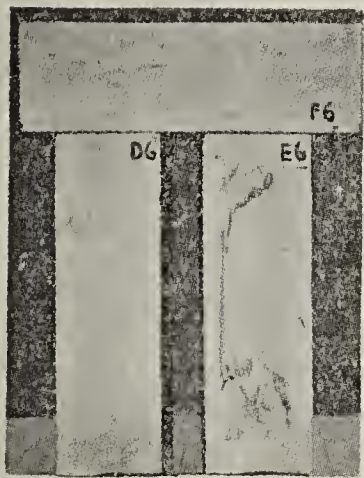


FIG. 2.
After crystallising test. D6, good; E6, F6 not so good.

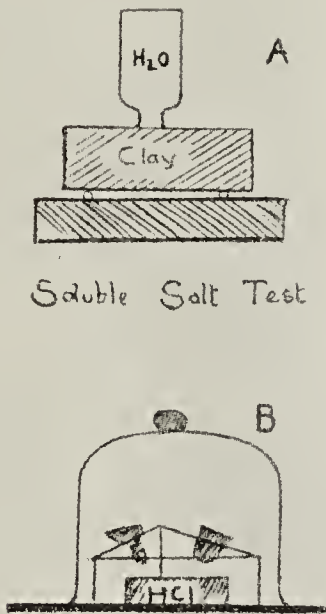


Fig 9.

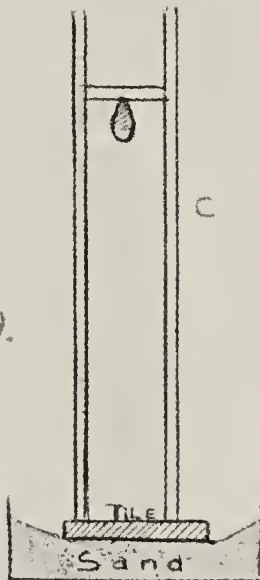


FIG. 6.
Result of ink test. A, not impervious; B, impervious.

Corrosive Vapour Test.

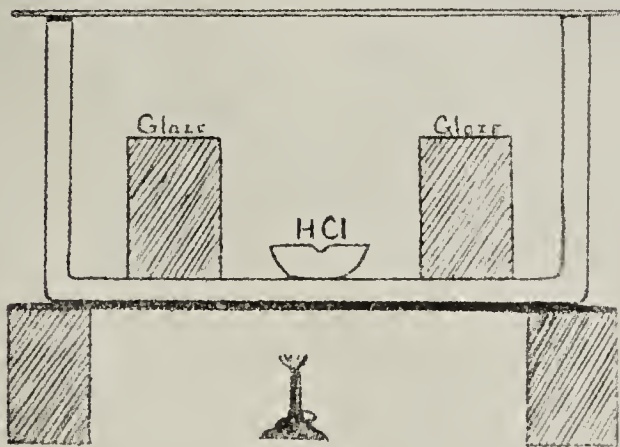


FIG. 7.

INK TEST



FIG. 5.
Ink is poured into either of the holes shown.

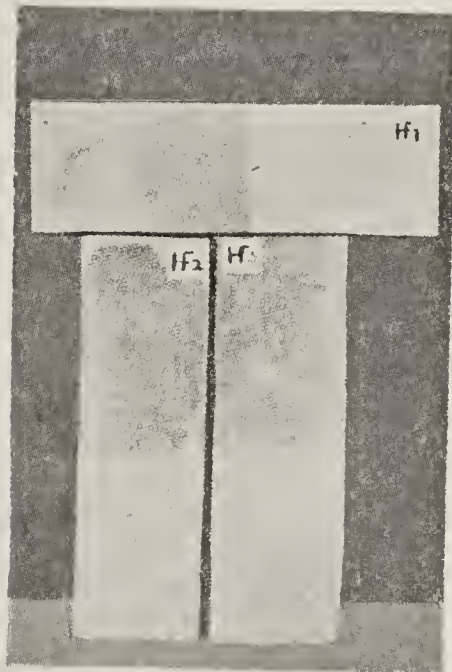


FIG. 8.
After exposure to ink, color, and a rubbing with carbon powder.

shaken on a coarse sieve, 25 to the inch, and the dust which passes through rejected. (Rejecting the dust does little or no harm, and makes the task easier of execution.) Fifty grms. are then covered in a porcelain beaker or evaporating dish, with 250 c.c. of distilled water, allowed to stand some hours, preferably in a warm place, and the liquid poured off through a washed filter paper. The treatment is repeated with another 250 c.c. of water, and the two filtrates evaporated together to dryness, the evaporation being finished in a weighed platinum or porcelain dish or crucible. The residue is dried at 120 deg. C. and weighed. The percentage of soluble salts = weight of residue $\times$ 2.

The residue can be subjected to ignition or to any qualitative or quantitative tests desired. A mode of determining soluble salts, without breaking the brick, is described in the "Tonindustrie Kalender," 1907, ii. Teil, page 120. A bottle is filled with distilled water, and on the mouth of it is placed the smooth unglazed surface of the brick. The bottle and brick are then inverted together, and placed, bottle uppermost, on two glass rods over a dish. The drops of water draining through the brick are collected in the dish below. The residue left on evaporation corresponds with the soluble salts originally present in the brick.

DIRT IN AIR OR LIQUID.

The next harmful agent to be considered is the dirt carried by air or liquid. Dirt may discolor the brick face either from the back or from the front. Dirty liquid causes discoloration from the back by penetrating the pores of the brick, and so reaching the back of the covering glaze. If the glaze is opaque then the color of the face of the brick is naturally unaffected, but otherwise it is spoilt by unsightly staining. Discoloration from the front is one of the commonest forms of deterioration in glazed clay-ware. Dirt carried by liquid or the atmosphere is often deposited temporarily on any glazed brick face, and, unless that face is of the proper character, a portion of the dirt is liable to find there a permanent lodgment. The only way to prevent this happening is to make the glaze perfectly smooth, with nothing of the egg-shell surface about it, which may look harmless or pretty in a new glaze, and to allow no minute pinhole depressions, but to insist on a smooth glassy surface.

LIABILITY TO DISCOLORATION.

To test the liability to discoloration from dirty liquid, the brick may be immersed, glazed face downwards, for about an inch above the glazed surface in red ink; the stain will spread through the clay, and may or may not show through the glaze; or a hole may be made in the glazed face, or under it at the side, and red ink be poured in (see Figs. 5 and 6). This is the common method of making the well-known "ink test." Sometimes excessive porosity accelerates the discoloration, by conveying the discoloring liquid more quickly to the face. A comparison of this effective porosity may be made by placing two bricks side by side in red ink, immersing them about 1 in. deep, with the glazed face uppermost, and out of the liquid, and noting the rate at which the red stain rises on the side of each brick. In making this test, it is necessary to ensure first that the immersed faces of the brick are not sealed by accidental glazing or fire-flashing. A convenient plan is to make the ink test and the crystallising test together. This can be done by adding ink or any staining fluid to the saturated solution of sodium thiosulphate before proceeding with the crystallisation test.

The liability to take in dirt from the front, which has been alluded to as so serious a matter, is partially determined by the ink test, when made by complete immersion of the glazed face, but the best test is to rub into the glazed face damp soot or lamp-black, and then to wipe it off. The smooth bright glaze is unaffected, but not the rough dull glaze. Small depressions in the glaze, which did not appear before, become defined black points. The test shows un-

mistakably the great value in one respect of a good glazed surface; it will not hold dirt. The effect of a dirty town atmosphere is at least as bad as anything that can be done by this rubbing; the dirt can be easily removed from a smooth glaze, but not from a rough one. If a good glazed brick wall is washed occasionally, the dirt on the face should come away completely. Apart from the holding of ordinary dirt, it is very desirable in such situations as the walls of hospitals and schools that a glazed surface should not harbor bacteria. If a glaze will not stand the black carbon test without disfigurement, it will hold bacteria, and so should not be used.

CORROSIVE LIQUID OR VAPOR.

The action of corrosive liquid or vapor tends, in the first place, to destroy the surface film of glaze, which must therefore be of a chemically resistant composition. Whether the destruction of the surface film, if accomplished, is very harmful, or comparatively harmless, depends on the structure of the whole substance of the glaze under the surface film. If the glaze is fused throughout to a close and solid glass, it has an enormous advantage over one which consists of a somewhat spongy or honeycombed mass, wanting in solidity and continuity, covered by a very thin, continuous surface film. In the former case, the removal of the surface film simply exposes a similar film below it. In the latter case, as soon as the first thin film is gone, then the exposed surface is comparatively rough and hollow in structure; it easily corrodes further, and, being porous, easily holds dirt, and so is soon disfigured. The spongy structure is commonest in glazes containing undissolved solid particles, whether there by accident or added to secure opacity. It is therefore often noticeable in glazed brick rendered impervious by the use of an opaque glaze. The action of corrosive liquid is of fundamental importance, at times in connection with glazed clay-ware used for chemical purposes, but the tests are best made with the special conditions in view, which vary widely.

CORROSIVE VAPOR.

Glazed brick may be used successfully to resist highly corrosive vapors, as in lining the fume-closet of a chemical laboratory. More commonly, the surrounding atmosphere is not so corrosive, but in towns, especially industrial centers, it always contains some acid constituents, such as sulphurous and sulphuric acids, formed in the burning of coal or coke. Our testing aims at deducing with some probability what may be expected to be the result of a slightly corrosive atmosphere, acting for a long time, from the observed result of a much more corrosive atmosphere acting for a comparatively short time.

The following test is described in the "Tonindustrie Kalender" (ii. Teil, p. 165):—"Weber's Wetterbeständigkeitsprüfer (weather-resistance tester) consists of a large glass bell with a broad rim, and stands on a glass plate. Inside the bell stands a porcelain vessel containing hydrochloric acid, and a tripod of glass rods, on which the glazed pieces to be tested are laid. The pieces remain for twenty-four hours inside the bell, with about 5 mm. depth of acid in the porcelain vessel. The effect of the acid vapor on the glaze is comparable with that of a long damp winter. After twenty-four hours the test pieces are dried, without wiping, in a warm dust-free place. If the glazed surface shows a white scum it is not weather resistant. Good glazes are, after drying, quite clear, without scum." It is to the credit of glazed brick makers in this country that only very inferior grades of their wares are in the least affected by the twenty-four hours' test made in this way. Soft enamels, burnt at low temperatures, and badly constituted chemically, are attacked, and some of the so-called majolica glazes, when badly made, although these can be manufactured quite re-

sistant. The glazes on fancy tiles and "art-ware" generally are also prone to fail. Generally, however, the test is not sufficiently severe for the better qualities of glazed brick, which are burned at higher temperatures and covered with a much more resistant glaze. Moreover, liability of a glazed surface to acid attack is often local, and so it is advisable to test very much larger surfaces than can be conveniently exposed in the form of apparatus described; a few square inches is not enough. The test, therefore, takes in my own laboratory a rather different form (see Fig. 7).

CORROSIVE VAPOR TEST.

A glazed sink is placed on an iron plate, under which a small flame is kept burning. The brick to be tested are placed in the sink with the glazed faces upwards, and also a crucible containing strong hydrochloric acid. The upper edges of the sink are coated with vaseline, and a sheet of glass, put on the top, and gently pressed down, makes of the sink an air-tight chamber, in which the vapors of the acid may act on the glazed brick. The glazes may be tested in this chamber for weeks or months without inconvenience, the gas flame being just large enough to keep the chamber gently warmed and charged with fumes of acid. At the conclusion of the exposure the brick is dried, and any residue thereon noted. It is then further tested by rubbing any damp carbon powder, such as soot or graphite, into the face for some minutes. If the glaze is a sound one, the black powder will not hold, and can all be wiped away with ease. If, however, the surface film has been destroyed and the glaze below the film is not sound, but is bubbly or spongy, then the black powder is forced into the face and sticks there. Although the form of test just described gives results quickly in some cases, it may with high-class glazed brick take weeks or months. A more searching test is necessary for rapid work, and it may be made by substituting hydrofluoric acid for hydrochloric acid, the hydrofluoric acid being placed in a platinum, rubber, or lead holder. No glaze will stand hydrofluoric acid, so far as I know, but glazes display considerable difference after the same exposure to it, more especially when the rubbing with black carbon follows. The test is particularly useful for determining the solidity of structure of a glaze under the surface film. Fig. 8 shows glazed brick of different makes exposed together for some twelve hours to hydrofluoric acid vapor, and rubbed with carbon dust. Half the glaze on each brick was protected by coating with wax before exposing, and the difference between the exposed half and the protected half at the end of the test is a measure of the action on the glaze. There are considerable differences between brick of different makes in the way they stand this test, and so a comparison between them can be made. Generally speaking, bright transparent glazes come out considerably better than opaque enamels, because they are so much less liable to be spongy in structure. The oxide of iron in the clay may dissolve in the hydrochloric acid, forming the yellow chloride, and so cause a discoloration in the clay, which may show through the glaze. Again, in the case of certain crystalline glazes, the crystals may be completely removed by solution in hydrochloric acid, and the color and general appearance of the glaze considerably altered.

PRESSURE.

The next deteriorating influence to be considered is that of pressure. The lower courses of a glazed brick wall are often subjected to great pressure, and the growing use of higher buildings is increasing the average pressure to be borne. If a glazed brick were to fail completely to bear the pressure, the consequences would be serious, but even any local unsoundness, particularly near the edges of the glazed face or just underneath it, is liable, under pressure, to cause cracking or shelling away of the glaze, especially round the edges. At this point may be indicated the part played by

joints in the preservation of large glazed surfaces. The substance of the brick, and the mortar or cement between the bricks, are hard substances in a degree, but they can give way and crumble a little locally without doing much general damage. A glazed surface, however, is different. If pressure is brought to bear upon its edges it cannot crumble, it splinters or cracks. Hence in constructing a wall from units of glazed surface, it is inadvisable that any two of these units should be in actual contact, unless it is certain that they will never be pressed one against the other, which is hardly ever the case. It is one function of the mortar or cement joint to provide a cushion between the brittle edges of the inelastic glazed surfaces. The force of pressure in destroying glazed surfaces is most often seen in a wall, or more particularly in an underground passage, when very narrow joints have been used between the brick or tile. To test the liability of a glazed brick to suffer from applied pressure, one way is to determine directly the crushing strain of the brick in a mechanical testing machine. To make the crushing test satisfactorily is only possible with special equipment, and as a matter of fact, high-class glazed brick never seem to fail under pressure in the sense of crushing as a whole. A glazed brick is more likely to fail locally at an edge or corner just under the glaze, and to an extent that would be of no consequence if the brick were not glazed. Probably the best test to detect liability to such fracture is the crystallising test previously described. It will be understood from the above that the direct pressure test cannot replace the crystallising test.

CHANGE OF TEMPERATURE.

That change of temperature often causes partial or complete destruction of glazed clay ware, it is unnecessary to explain, but the range and rate of variation to be resisted may vary within wide limits, and the test is best made to correspond with the special requirements.

PERCUSSION.

Resistance to fracture by the falling of a hard substance upon the surface of clay-ware is specially important for roofing tiles, and Marten's "Fall Apparatus" is made for this purpose. (See "Tonindustrie Kalender," 1907, ii, Teil, p. 159.) In that apparatus, diagrammatically shown in Fig. 9, a pear-shaped weight is caused to fall from a measured height on the surface of the tile bedded in sand. The weight and height can be altered, and deductions made accordingly. (I have had no experience with this test.)

SCOURING.

The effect of scouring may be due to sand carried in liquid or blown in air, or to actual rubbing. The result is scratching of the glaze, and ultimately the wearing away of the surface film. The lower courses, especially at the corners, of brick walls built in busy places, often show the effects of knocking, rubbing, and scratching. Hardness of glaze and solidity of structure under the surface film will be understood to be necessary if scouring is to be resisted. A test which would certainly be useful, if the details were worked out, is the application of a sand-blast or a scouring of the glazed face with sand and water, followed by the rubbing in of damp carbon powder. The chief difficulty in either case is to control and standardise the amount of scouring.

Any of the tests which have been described may have to be somewhat modified to suit the sort of glazed clay-ware tested. Only such tests as are capable of fairly general application have been considered. Some of them are very simple and obvious, but, so far as I know, they have not been systematically described or collected. Moreover, it has been my desire to simplify the apparatus and manipulation described for testing as far as possible, so that means of distinguishing between good and bad might lie to hand for everybody interested in the quality of glazed clay-ware.

BRICK VS. CEMENT: AN ANSWER TO A CEMENT MAN'S INTERVIEW

Van Meter, Ia., Sept. 27.—To the Editor: I notice in your issue of the 27th inst. an interview with a Mr. A. W. Rush, an expert cement man and consulting architect for an expanded metal concern, in which he says that cement construction is cheaper and more nearly fireproof than brick construction.

I feel that this broad statement made by Mr. Rush may be, in a measure, injurious to the largest manufacturing industry in Iowa (that of burned clay products), and as secretary of the clay working association of the state, wish to call the attention of your readers to some of the history of concrete construction that Des Moines and Iowa people may be induced to seek an unprejudiced source of information on the subject, if it be possible, and if not, to consider the reports of the frequent failure of such structures through collapse and the loss of life frequently following, as published in the press.

Judging from views contained in a book recently published in Los Angeles, "Burnt Clay Products in Fire and Earthquake," it seems that there is little question but that burned clay products are far more reliable than cement when subjected to fire or unusual strains.

Nearly all clay men are willing to give cement its due; to admit that it is a great aid to commercial development; that it has supplanted brick quite successfully in certain construction work, such as pier work (here through cheaper construction), in sidewalks, in machine foundation work and in other construction work of this class where tensile strength is not particularly essential. On the other hand, clay people and hundreds of thousands of builders are not ready to admit that cement is as good a fire resistant; not as good a moisture resistant and not as capable or safe a constructing material as clayware and structural steel. It may be that clay people are the ones who fear this form of construction the most, that is, fear that it will cause loss of life, but there are a great many people who have read of the many failures in concrete construction and who fear to enter these monolithic structures.

Bearing on the advantage of the cheapness of concrete construction, owing to ability to use cheap labor in construction, is an article in the Pittsburg Dispatch, which reads in part as follows:

"It emphasizes the fact, so often pointed out, that reinforced concrete must be handled along scientific lines and with much care. Otherwise it is dangerous. The usual explanation of such accidents is that supports have been removed while the work is 'green.' That statement may explain but it does not excuse. Mistakes of that kind should not occur. Concrete construction of ordinary lines is tedious if the factor of safety is fully regarded, but no contractor has any right to try to make speed at the expense of security. One thing is obvious. Concrete is a new type of construction. It must be followed cautiously until the factors of safety are absolutely determined. Stresses and strains must not only be carefully computed, but ample margin must be given until experience fixes limits. Every engineer and architect is aware of the treachery of improper

mixture in concrete, and it really seems this type of construction should be put under expert official inspection. General building inspection is recognized as a necessity. Concrete demands something more than perfunctory supervision, at least until experience has reduced the frequency of such accidents as that in Philadelphia yesterday."

These comments followed the collapse of the Bridgeman building in Philadelphia. Concrete construction, carried out on so called fireproof construction lines has been attractive because of a saving in first cost. This cheaper construction is attained through the use of unskilled labor and because the rigid steel frame construction used in clayware fireproof construction is in cement or concrete construction replaced by wire cloth, small iron rods and other forms of wire.

The building of cities seems to be an oft repeated operation. That which is ample for the needs of the present decade needs to give place to the heavier demands of a comparatively few years hence, and instead of a progressive operation in building, we find that it is economy to build for present needs and demolish and rebuild as the heavier demands come. Concrete construction permits of no such idea. The materials once used are forever worthless and more difficult to remove. Who can tell what Des Moines will need in twenty-five years from now? What committee of builders in public work stands ready to provide at present for the very probable demands of the next twenty years even? Of course, they expect to provide a building to last Des Moines for an indefinite period and should do so. It is, however, beyond the probable desires of the taxpayers to provide at present for the needs of the Des Moines of twenty-five years from now. A monolithic building is not the thing, particularly for the public buildings, where no man can correctly forecast the needs of the public, or at least do so and have the support of the taxpayers.

Yours truly,
C. B. PLATT.

MORE ORDERS FOR BRICK THAN CAN BE FILLED

A trip to one of the Rome, Ga., brick plants revealed signs of great prosperity. Just across the Oostanaula river is located the plant of the Trammel Brothers Brick Co. This plant has been running day and night in order to fill the orders which this concern has contracted for. Mr. Trammel states that the plants of Morrison and Trammel, the Rome Brick Company, and the Trammel Brothers are over run with orders and it is almost a physical impossibility to fill same.

Such cases as this go to show that the building boom is on. These local brick plants are receiving orders from all sections of North Georgia and Alabama, and nearly every order received from places away from Rome is for the construction of iron furnaces, kilns and similar manufacturing concerns, which also proves that the iron industry in this section is becoming a very important factor in the commercial world.

To visit one of the local brick plants just at this season of the year gives one a very good idea of the growing condition of Rome, and impresses the fact that Rome will some day figure prominently as one of the leading cities of the South.

SKYSCRAPER IS SAFE, IS VIEW OF EXPERT

(Executive Officer International Society of Building Commissioners.)

By F. W. FITZPATRICK.

The president of the New York Board of Fire Underwriters' prophecy that it is only a question of time when New York's skyscraper district will be devastated by fire in the upper stories of those tall buildings is naturally attracting much attention. To a degree it is calculated to do good, but broadly considered it is harmful and of the genus purely alarmist. Of course, such a thing is possible, on the assumption that there is nothing impossible, but even with the buildings as they are, the contingency is extremely remote, and with a few additional precautions added to what have already been taken such thing is utterly impossible.

To compare New York or Chicago with Baltimore or they possibly can be. In both those cities there were but a few skyscrapers, and entirely surrounded by a most inferior class of buildings. In neither city were the skyscrapers at all comparable to those in New York, in as far as construction and fire prevention are concerned.

MODERN STRUCTURES WELL BUILT

In New York the tall buildings are in a reasonably well-built district, and so are those of Chicago; the general character of the older and lower ones is vastly superior to the average of what existed in either Baltimore or San Francisco, and in themselves the skyscrapers are superior, too. Their tall frames of steel, thoroughly protected with brick and tile fireproofing, offer absolutely no structural prey for flames, and the management of the buildings, the nature of their contents, as well as their general finish, are such that the probability of any extensive internal fire is indeed remote.

Add to that the fact that there are so many tall buildings together and of the same general character and you have reduced the possibility of external attack to the very minimum. It may seem paradoxical, but is a fact nevertheless that if you could have a city or an entire district of well-built buildings they would need be only of incombustible rather than absolutely fireproof construction, because you would have eliminated the danger of fire by eliminating material that would burn.

PLEA FOR BETTER CONSTRUCTION

Rather than generally condemning the skyscraper as a dangerous structure, Mr. Babb, the board of underwriters and the others who feel at all alarmed had better join forces with this society, the leading engineers of the country and the local building departments in urging not that skyscrapers be not built, but that they be even better devised than they are now. Many of the big structures of our important cities are well-nigh perfect as they are, but in many of them some one thing or another has been neglected that makes grave damage by fire possible, though hardly probable. The safeguards are few, inexpensive, possible to be introduced in any and every existent structure and are absolutely infallible in that they would render those tall buildings beyond any question of a doubt the safest place in which anyone could have his abode.

First and foremost, absolutely cut off all vertical open-

ings by thoroughly inclosing stairway and elevator shafts, so that each story constitutes a unit or a separate building by itself.

WINDOW AS SOURCE OF DANGER

Next, look to the windows. Therein lies the most imminent peril. Eighty per cent of all the damage done in buildings in which fire did not have its origin was the fault of insufficient window protection; full 90 per cent of San Francisco's loss and 44 per cent of our yearly fire losses are directly attributable to the same cause. Therefore, wherever good and sufficient window protection has not been provided in skyscrapers, the matter should be attended to at once. New window frames could easily be substituted for the old, and at no great inconvenience to the occupants of the buildings, and the cost would be the very best and most highly protective insurance the owners could indulge in. Every frame and sash should be of metal or other incombustible material, glazed with wire glass and preferably made automatically closing.

Wherever the provision has not already been made abundant local water supply should be installed, big tanks, plenty of hose and individual appliances. Then, the employes of the building should be thoroughly trained in fire drill so that each one of those buildings becomes an independent factor that relies to a degree on the city departments and water for assistance, but not for initiative, and in ninety-nine cases out of a hundred, sufficient protection.

Mr. Babb to the contrary notwithstanding, I firmly believe that the skyscraper district of New York and of Chicago, even as it is, is about as safe a place as one could find in any city, and if the owners will but take few precautions enumerated, still greater security would result.

UNITED STATES STEEL TRUST TO MAKE BRICK

Pittsburg, Oct. 10.—The United States Steel Corporation has decided to manufacture bricks for its own use in the Pittsburg mill district, and may possibly buy up all the brick-making concerns in this part of the country and enter the market as producers of fire brick also. Much consternation exists among small brick-making concerns because of a circular letter from the offices of the Carnegie Steel Co. here asking for information regarding the workings of the various plants.

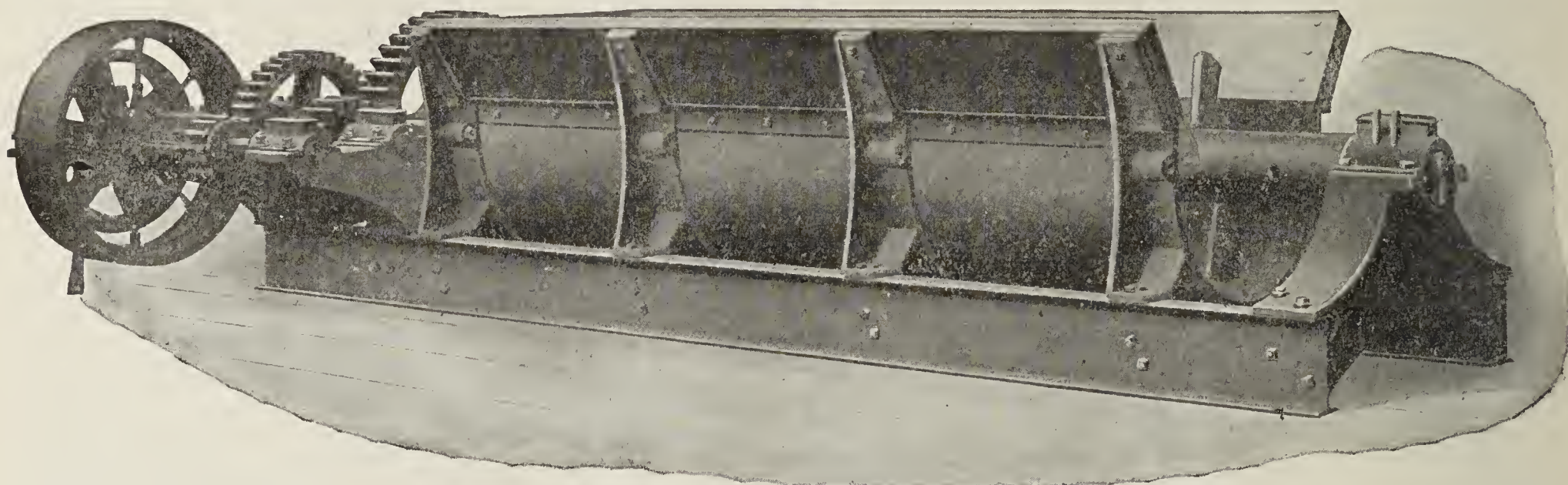
Many of the brick makers are asked to submit for 20 days in succession samples of their brick as turned out daily and also supply some detailed working drawings. Each plant has also been asked to show its location with reference to the Pittsburg manufacturing district; how the plant is reached by either water or rail, and the cost of transporting material, raw and finished. The brick makers are in a quandary.

A committee has been appointed by the Carnegie Steel Co. to report on the brick situation. Thomas McDonald of Youngstown, Ohio; Homer Williams of Duquesne, Pa., and J. S. Unger of Pittsburg comprise the committee and much difficulty is experienced in getting the data, as the smaller brick makers are fearful that a move is on to force them out of business, and so will not give information.

A NEW LINE OF GRANULATORS

H. Brewer & Co., of Tecumseh, Mich., are now offering a new line of granulators consisting of four patterns, spur and bevel geared, pushing and pulling designs. They are claimed by the manufacturers to be exceptionally strong and heavy machines of most modern construction and to include a number of valuable ideas which make them especially desirable.

The shells are rolled from single sheets of 5-16 in. steel, are reinforced upon their upper edges with steel angles and supported at four points in their length by heavy cast saddles. These saddles also support the upper extensions of the shells which are made of 3-inch seasoned oak plank and serve as a beginning for the construction of the hoppers, built of plank, usually employed. The pugging knives are forged from hard high-carbon steel, have blades 10 in. long and round shanks which are mortised into the shafts. They are secured in any desired position by means of taper keys, thus making each one independently adjustable and subject to removal without disturbing any other knife and without removing the shaft from its bearings.



A CLAY GRANULATOR; MADE BY H. BREWER CO., TECUMSEH, MICH

The thrust bearings are of the Marine pattern which consists of square elevations running around the shafts at the point where they are enclosed in the bearings, with grooved boxes and caps to fit; giving much more bearing surface than is possible with collars of reasonable size and excluding all grit and foreign substances from between the surfaces of contact.

The tops and delivery ends are entirely open, but by adjusting the knives to the proper pitch it is possible to control the length of time the clay is kept in the machines and the rate of delivery, irrespective of the speed at which the machines are driven or the amount of clay there may be in the hoppers above them.

The specifications indicate that these machines weigh 18,000 pounds each. Granulating shafts 10 in. diameter. Gears $2\frac{1}{4}$ and $2\frac{3}{4}$ in. pitch, 6 and 8 in. face.

Further particulars may be obtained from Bulletin No. 9 issued by H. Brewer & Co., Tecumseh, Mich., which will be gladly mailed upon request if you mention the Clay Record.

NEW MONTELLO PLAN DETAILED

After a consultation lasting two days between the directors of the Montello Brick Company, Reading, Pa., and the committee of bondholders of the Montello Brick Works, no definite action has been agreed upon, further than that the bondholders' committee will present the proposition laid down by the directors and their ideas will be ascertained.

It appears that Messrs Arthur Buck and T. Dawson Coleman, both of Lebanon, and George Brooke, of Birdsboro, bondholders as well as stockholders, who were present at the meeting agreed to the proposition submitted, but Messrs Howard L. Boas, Dr. Walter A. Rigg and Robert E. Brooke, representing the bondholders, will present the plan to the latter, and if they desire any suggestions or amendments their counsel will incorporate them in their answer. Richmond L. Jones represents the Montello Brick Company, which is not insolvent.

The plan decided upon is somewhat complicated, although it is said to promise a highly successful solution. The debts of the company amount to \$150,000. To liquidate these and to obtain money to carry on the business and start up the

brick plants on a paying basis is the principal object of the directors.

To do this the directors point out a scheme by which they propose to hold out a helping hand to the bondholders of the United States Brick Company and Montello Works. They ask that an assessment or voluntary contribution be levied upon the bondholders of these two companies, and in exchange for this issue, they will be given new stock of the original Montello Brick Company. The directors agree to take over the bond issues of the other two companies.

The bond issue of \$1,500,000 in the Montello Brick Works which, should the lease revert to the Montello Company on Nov. 1, on account of default of interest payment, would be practically worthless, assessed at 10 per cent as is proposed, would yield \$150,000. The \$400,000 bond issue of the United States Brick Company, which is in the same shape now as the Brick Works stock, would yield \$40,000. This total of \$190,000, together with the first preferred stock of the Montello Company of \$500,000, would make up the new \$690,000 preferred stock issue in the Montello Company.

The second preferred stock would represent the \$550,000 issue, which is the present Montello Company's common stock. The third preferred stock would represent the \$1,650,000 issue, represented by the notes of the directors, bonds formerly represented in the U. S. Brick Company and Brick Works and all debts. The fourth claim would be the \$400,000 issue of common stock.

Thus the proposed plan would represent a stock issue in the Montello Brick Company of \$3,305,000, made up as follows: \$690,000 first preferred; \$550,000 second preferred; \$1,650,000 third preferred, and the \$400,000 common stock; a total of \$3,305,000.

In order to pay dividends on the first three preferred stock issues \$174,000 profit a year would be needed. At 6 per cent it would require nearly \$42,000 on the first preferred issue of about \$690,000; \$33,000 interest on the second preferred stock issue of \$550,000; \$99,000 on the third preferred stock issue of \$1,650,000, making \$174,000 a year to be made up on interest to pay on the stock at 6 per cent, without allowing any payment on the \$400,000 common stock issue, which would come in last and on which the payment of interest was defaulted on Oct. 1 last.

According to the annual statement made by the directors of the brick companies in 1905, 77,000,000 brick were sold in 1906, 85,000,000 brick were sold, and in the first seven months of this year 60,000,000 brick were sold. At \$2 a thousand, the market price, this would average about \$165,000 income a year. Thus allowing credit for better management in the future the income from the plants of \$165,000 a year, it is argued, can be increased to the \$174,000 desired to meet the payment of 6 per cent on all stock issues save the \$400,000 common stock.

Under this proposition bondholders have asked for assurances of better management. It is said that the Perkiomen brick plant was bought originally by certain directors and others for \$25,000 and rented to the United States Brick Company for \$12,000 a year or at a profit to the investors of 48 per cent. The Perkiomen fire brick plant was also purchased for \$12,000 and rented to the U. S. Brick Company for \$6,000 a year, or at a profit of 50 per cent.

Under the new organization, it is said, this squandering of money will cease, and with the bondholders of the two underlying companies protected by a stock issue, the United States Company and the Montello Works can be wiped out of existence.

KILNMEN AT EAST LIVERPOOL MAKE DEMANDS AND WALK OUT PENDING SETTLEMENT

A majority of the potters in the East Liverpool, Ohio, district are tied up so far as the kiln department are concerned and the clay shops will be affected in the event that the dispute of the kilnmen is of any length. The kilnmen demand that individual butters be sponged before reaching their department. The proposition has been in the hands of the standing committee for some time, but no decision has been announced. A resolution passed at the last convention provided that the butters be sponged in the dipping house. A number of kilnmen, however, remained at work, refusing to walk out and abide by the decision of the local. A special meeting of the kilnmen's local was held tonight to discuss the proposition. The fact that the men quit work is asserted by some to be a violation of the agreement between the manufacturers and the brotherhood.

THE TWENTY-SECOND NATIONAL CONVENTION TO BE HELD AT COLUMBUS, OHIO, FEBRUARY 3-8, 1908

The statistical chart recently issued by the United States Geological Survey shows that Ohio still maintains her position as the leading State in the production of clay wares. Buckeye kilns turn out 19.26 per cent of the entire clay products of the country.

It is peculiarly fitting that we should meet in the capital city of this, the chief clayworking State of the Union. It is so centrally situated, so easily accessible to a great majority of the clayworkers of the land, that it would seem an attendance exceeding even that of the St. Louis convention, which was the best convention in point of members yet held, may be anticipated.

Hence we are pleased to announce that arrangements have been completed for a convention at Columbus the week of February 3d, at which time the Ohio School for Clayworkers will keep open house, and Prof. Orton and his assistants will not only bid all visitors a cordial welcome, but will be prepared to demonstrate the advances made along technical lines in the art of clayworking since our previous meeting there in 1899.

The brick manufacturers of Columbus and vicinity will demonstrate that the cordial invitation extended by them through Prof. Orton at our last meeting was not a mere form of words, but will individually and collectively extend a welcome so earnestly heartfelt and warm that, regardless of the temperature, the visitors will have no occasion to make a midwinter trip to the tropics, and while the entertainment afforded will be so timed and planned as not to interfere with the deliberative work of the convention, the local committee will strive strenuously to make the week one of many pleasures.

It is too early to announce railroad rates, but as Ohio and adjoining States now operate under a 2-cent law, and those coming from a distance can obtain the same low fare by using mileage books, the same relative rate that has heretofore prevailed is assured. The N. B. M. A. hotel headquarters will be at the Southern Hotel, where special rates have been arranged for.

As in former years, the American Ceramic Society will meet Monday, Tuesday and Wednesday forenoon. They will rendezvous at the Hartman Hotel, which is two blocks from the Southern.

The National Paving Brick Manufacturers will meet in a parlor of the Southern, as will also the Machinery Manufacturers' Association.

The N. B. M. A. sessions will, as heretofore, begin Wednesday afternoon at 2:00 o'clock, and ample provision will be made for an exhibition room affording adequate facilities for all who may wish to display samples of brick, models of clayworking machinery, factory supplies, trade literature, etc.

Those desiring more detailed information on any feature of the convention, or the requisite of membership, etc., are requested to communicate with the secretary at Indianapolis.

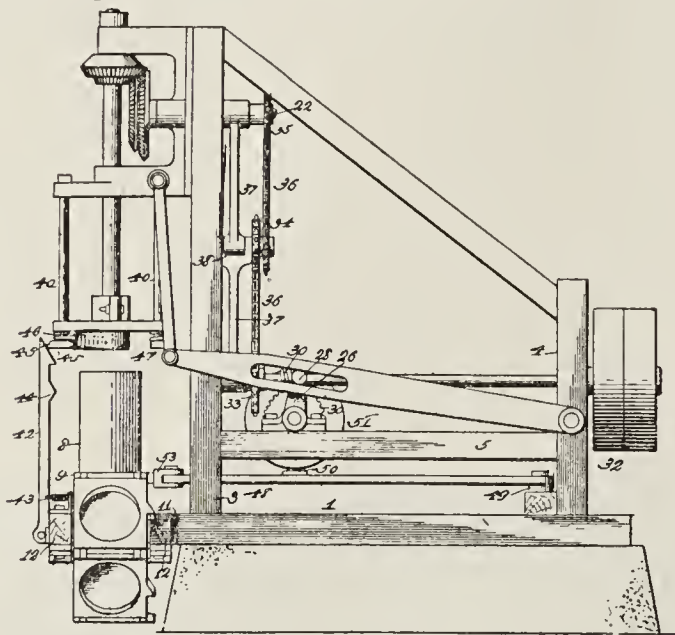
THE EXECUTIVE COMMITTEE,
WM. CONWAY, President.
THEO. A. RANDALL, Secretary.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

859,039. Brick-Pallet. Anson J. Bentley, Niles, Ohio. Filed Aug. 29, 1906. Serial No. 332,550.

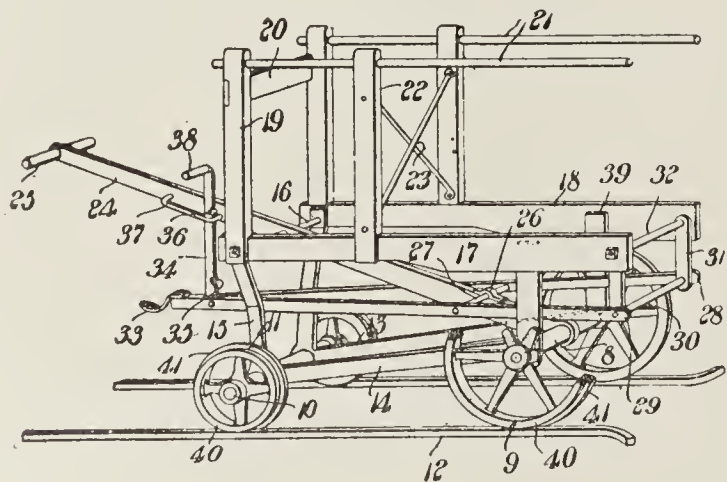
In a tile machine, the combination of a forming-head, composed of two or more differently rotating parts, a mold conforming to the exterior of the tile and concentric with said head and mechanism substantially as described to rotate said heads at differing rates of speed and simultaneously to raise and depress them.



In a tile machine, the combination with a mold for the outside of the tile, a forming-head for the interior thereof, mechanism adapted to simultaneously revolve said head and raise and lower the same, an endless carrier for the mold, comprising a series of linked plates and carrying sprockets therefor and means for advancing said carrier step by step comprising a pivoted lever provided with a pawl to engage said carrier-plates and a cam adapted to shift said lever intermittently and while the forming-head is elevated above the mold.

860,699. Brick and Tile Truck. John F. Siegel, Creston, Iowa. Filed March 5, 1907. Serial No. 360,699.

A wheeled truck including a pivoted body portion, means for raising and lowering the free end of the body portion, a draft device associated with the truck, and means carried by the elevating means and engaging the draft device for locking the body portion in adjusted position.



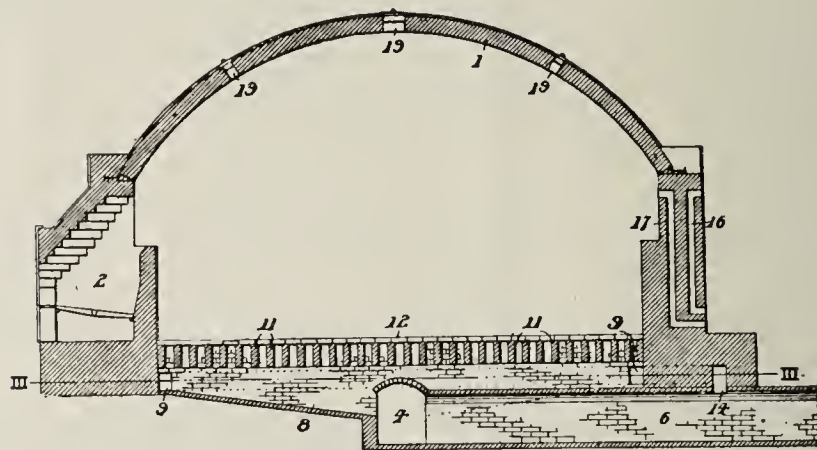
A truck having front and rear axles, a stationary frame carried by the axles, a body portion pivotally mounted on the stationary frame, converging reach bars pivotally connected with the free end of the body portion for raising and lowering the latter, the converging ends of said reach bars being secured together and extended longitudinally beyond the adjacent axle to form a foot piece and a draft device pivotally connected with the reach bars.

860,701. Refractory Lining for Retorts. Frank B. Smith and Guilford C. Glynn, Iola, Kans. Filed Nov. 23, 1906. Serial No. 344,727.

A neutral lining for highly heated surfaces, comprising an inert refractory material mixed with chromic oxid.

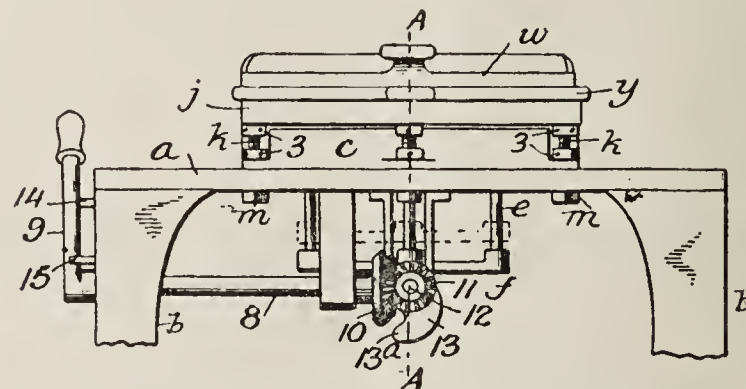
The process herein described of lining fire-clay surfaces which consists in first applying to the same a fluid coating of a fusible compound of an alkaline earth capable of forming an enamel under a high heat; then applying thereto an external coating of a neutral refractory material and then burning the same to cause an adhesive affinity between the enamel and fire-clay on the one side and the enamel and external refractory material on the other side.

861,410. Burning-Kiln. Frederick A. Weigel, Johnetta, Pa. Filed July 3, 1906. Serial No. 324,591.



In a device of the character described, a suitable burning kiln; a covered passage-way extending from side to side of the kiln and communicating with an air well; a draft flue intersecting said passage-way and extending to a draft stack; a damper in said flue; a plurality of openings formed in said passage-way; a plurality of supporting walls extending across at right angles with the covered passage-way and between the openings formed therein; air spaces between each two walls communicating with the openings through the passage-way, the bottoms of which incline toward said passage-way; and a circular auxiliary flue extending around the kiln, communicating with each air space and draft flue, the ends of said auxiliary flue being separated by a dividing wall and having damper means for regulating the draft therethrough; as, and for, the purpose set forth.

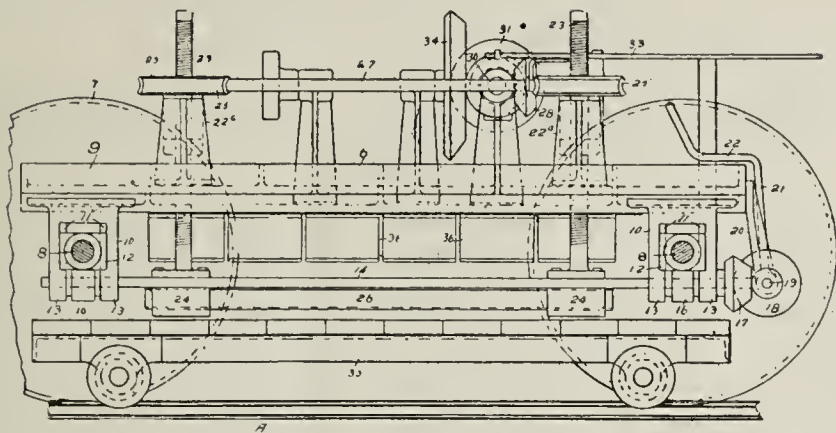
861,520. Tile-Making Machine. Samuel A. Jones, Deshler, Ohio. Filed March 15, 1906. Serial No. 306,235.



In a molding machine of the character set forth, the combination with a table, of molding means mounted on the table and having actuating devices disposed at one side of the same, a pallet associated with the molding means, a spider located beneath the table and having upstanding pallet engaging pins, a shaft journaled beneath the table and extending toward the side having the actuating devices for the molding means, a cam on the inner end of the shaft that bears against the spider, a countershaft located beneath the side of the table on which the actuating devices are located and geared to the outer end of the first mentioned shaft, and an actuating device secured to the outer end of the countershaft and disposed at one side of the actuating devices.

862,259. Brick-Making-Machine. Robert E. Laughray, and George F. Laughray, Bay City, Mich. Filed July 14,

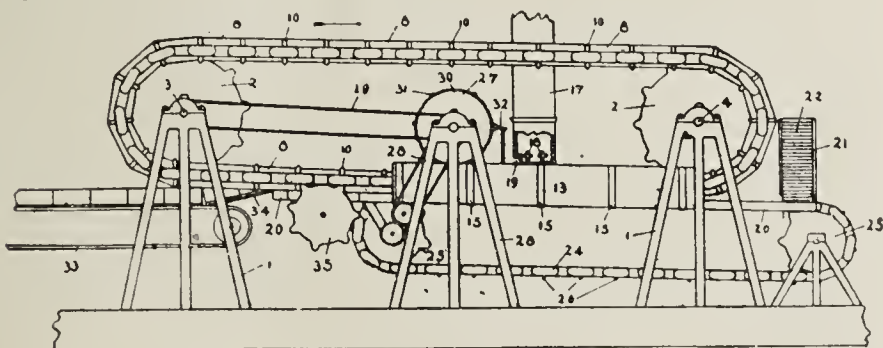
The combination with a mold, of strippers adapted to register therewith to eject the article in the mold, a stationary support for one face of the brick means for imparting vertical movement to the mold toward the members and a single means for adjusting the strippers toward the mold prior to the ejection of the molded article and for simultaneously moving the strippers and mold away from the article subsequent to its ejection from the mold.



The combination with a mold, of an ejector comprising a body, a stripper depending therefrom, and with which the mold is adapted to register, hangers depending from the body, supporting boxes on which the hangers are adapted to slide, eccentrics journaled in the hangers beneath the boxes, a stationary curved wing depending to a point beneath the eccentrics, the eccentrics adapted to engage the curved wings to raise and lower the body, means carried by the body for moving the mold and its contents toward and from the stripper and means removably located beneath the mold when in engagement with the stripper, for receiving and supporting the contents during its ejection.

862,558. Brick-Making-Machine. Ira E. Hiscock, Bay City, Mich. Filed March 12, 1907. Serial No. 361,953.

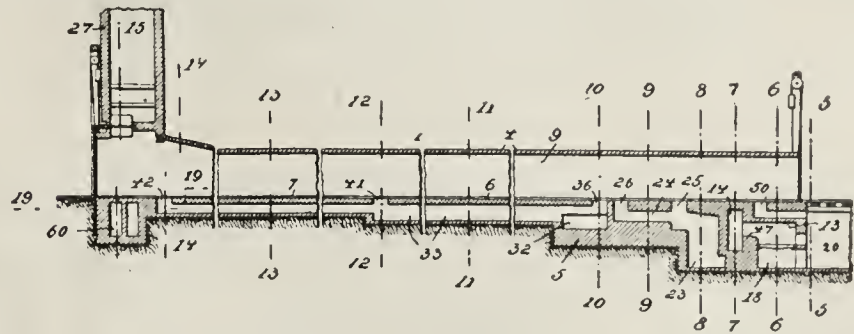
A brick-making machine comprising an endless chain of molds, a casing for confining the return section of the chain of molds, a casing in which the return section of the chain of molds is confined during a portion of its travel, means for supplying material to the molds during their progress through the casing, means for automatically supplying pallet boards to the bottom faces of successive molds prior to the filling of the molds, means for compressing the material in them olds, and means for partially disassembling the molds to release the completed brick and pallet boards, as the chain of molds progresses.



A brick-making machine comprising an endless chain of molds, a casing for confining the return section of the chain of molds during a portion of its travel, the sides of the casing being removed adjacent the discharge end of the machine, the bottom of the casing being slotted and extending from the receiving end to the discharge end of the machine, means at the discharge end of the machine for simultaneously raising and separating the endless chain of molds and a pallet board feeding chain received in the slot in the bottom of the casing and adapted to supply the respective molds with pallet boards.

861,733. Drier. Edwin A. King, Philadelphia, Pa. Filed April 4, 1907. Serial No. 366,265.

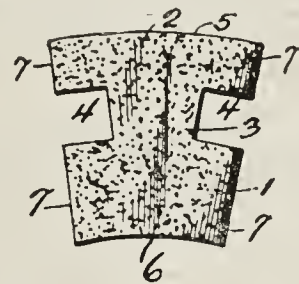
In a drier, a drying tunnel, a furnace and a series of air flues located alongside the furnace and smoke flues and having extensions of increased cross-section intermediate of their ends, a second series of air flues located alongside the furnace and below the smoke flues, a chamber located below said smoke flues, and a third series of air



flues leading from said chamber toward the stack end of the tunnel, said chamber adapted to connect the second and third series of flues with each other and to permit of expansion of air therein.

864,283. Brick and Wall Constructed Thereof. Elmer D. Andrus, South Chicago, Ill. Filed July 12, 1906. Serial

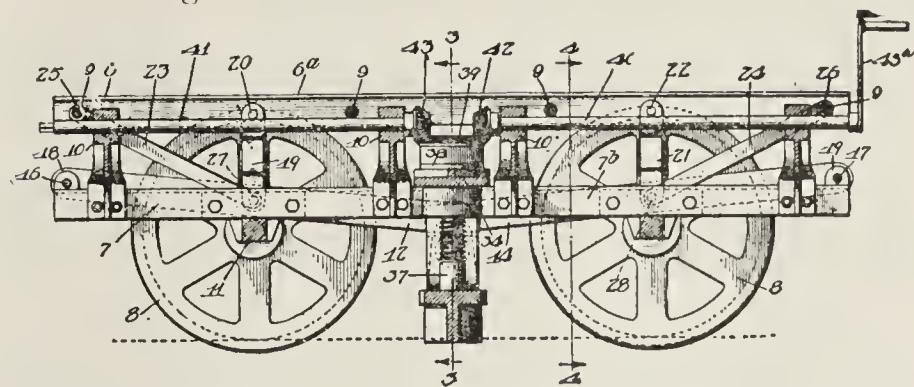
A wall comprising bricks arranged in transverse courses and in longitudinal alignment, each of said bricks being formed adjacent its side edges at opposite points with recesses extending from front to rear and extending to the edges thereof, and designed to register with the recesses in the longitudinally and transversely adjacent bricks, and a



reinforcing agent disposed within said recesses and comprising a filling of cement molded therewithin and metallic strengthening members embedded in said cement filling in longitudinal and transverse relation, said members overlying the respective adjacent bricks in pairs, said members comprising bands having bent ends to grip said cement filling, said bands being arranged independently between the respective pairs of several adjacent bricks.

865,299. Vehicle for Carrying Brick. John J. Gledhill, St. Louis, Mo. Filed April 5, 1906. Serial No. 309,988.

In a vehicle of the class described, the combination with a movable supporting frame, of a rigid frame, a yoke secured to said frame, rollers secured thereto, a series of levers secured to said frame and seated on said rollers, and means for actuating said levers.



In a vehicle of the class described, the combination with a rigid frame, a movable frame, a yoke mounted on said rigid frame, rollers mounted on said yoke, lifting levers pivotally secured to said frame and loosely mounted on said rollers, means for operating said lifting levers whereby the elevation of said movable frame is varied, said means comprising a screw seated in said yoke, a threaded bearing secured to said rigid frame, a crank shaft, and gearing connecting said crank shaft and screw.

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OCTOBER 15, 1907.

No. 7

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products Manufacturers will be held at Ottawa, Canada, November 19, 20 and 21, 1907.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

Are you a subscriber to the Clay Record? If so, thanks! If not, get in line at once. The Clay Record is printed twice a month and gives to you the news of the clay world before it is stale; often two to six weeks ahead of the other journals. Subscribe for it; advertise in it!

Confidence is great stuff.

Lots of men and things seem easy until you try to do them.

Better a word in season than an hour's lecture out of season.

Make one good move each day. For this one subscribe for the Clay Record.

A man is foolish to go around looking for trouble unless he is strenuous enough to take a fall out of it.

PENNSYLVANIA FIRE CLAY INTERESTS
MERGE

Papers have been filed in the State Department at Harrisburg, Pa., for a consolidation of fireclay interests in the upper Juniata Valley. The new company will be known as the Alexandria Fireclay Company and will comprise properties at Petersburg and Alexandria, Huntingdon County and Lily, Cambria County. There are also several companies under development in other counties. S. H. Spyker, of Huntingdon, and John Phillips and J. N. Hatfield, of Alexandria, are interested. The plants will be enlarged and a large scheme of development undertaken.

IOWA BRICK MEN ASK MORE SHOW

At the meeting of the Greater Des Moines committee Freight Commissioner Wylie called attention to the importance of the docket of the board of railroad commissioners hearing. Among other things that will be considered are rates on brick and analogous commodities. The rate from East St. Louis and Galesburg, Ill., to Omaha is 7½ cents per 100 pounds. The distance from East St. Louis to Omaha is 411 miles and the Iowa distance schedule for that distance is 17 cents per 100 pounds. The manufacturers of Iowa believe that in view of the interstate rates the intrastate rates should be so adjusted as to give Iowa producers more of an even show in selling to Iowa brick users versus producers outside the state.

Commissioner Wylie is now also engaged in preparing a paper to be read before the meeting of the National Industrial Traffic league to be held in Washington, D. C. The league was organized in Chicago last summer, and at that time Mr. Wylie was elected to the board of directors. Mr. Wylie will serve as chairman of the committee on tariff at the Washington meeting, and his paper will deal with this subject. It is expected that some or all of the interstate commerce commissioners will be in attendance during the conference.

ANTICIPATE A COAL SHORTAGE

Fort Dodge—In anticipation of a coal shortage, the Plymouth Clay Products company, of Ft. Dodge, Ia., has placed an order for a solid train of Illinois coal to be delivered at their new sewer pipe factory adjoining the city on the south. The plant is rapidly nearing completion and the management expects to have the coal on hand when the plant is ready for operation. It is their purpose to have an abundant supply and it will be stored in suitable quarters for a winter's run of work.

OBITUARY

Joseph Beardmore, a pioneer in the pottery trade at East Liverpool, Ohio, died at his home, aged 74 years. He resided in East Liverpool since 1849 and was an authority on all branches of the industry.

Jesse Green, aged 90 years, died at the Ryburn Hospital at Ottawa, Ill. He started the first brick-plant in LaSalle county. The funeral was held at the C. B. Hess residence, Mrs. Hess being his daughter.

Robert Heape, who returned to Syracuse, N. Y., from New Castle, Pa., to accept his former position as superintendent of the Onondaga Pottery, died at his residence, 614 Ulster street. He was 62 years of age.

Alfred Abrahamson, a wealthy brick manufacturer of Youngstown, Washington, died of Typhoid Fever at the Providence Hospital in Seattle. The estate is estimated at over \$500,000, made by him since 1889 when he started as foreman for the Seattle Brick & Tile Co., afterwards building his own plant.

 ACCIDENTS, DAMAGES AND LOSSES

The Huntington (W. Va.) China Co., has been placed into the hands of a receiver.

Joseph Kuss age 50 years, an employe of the Omaha (Nebr.) Brick & Tile Co., was found dead in the office with a bullet hole in his head, supposed to be self inflicted.

A. V. Sturgeon, manager of the Nansemond Brick & Tile Co., Suffolk, Va., was badly hurt by a clay car turning over and striking him on the back.

Roy Jones, a 12 year old boy, while playing at the Mason City (Ia.) Sewer Pipe Works had the flesh torn from his leg, laying bare the bone by getting caught in a dump car.

T. E. McDow has been appointed receiver of the McNeil Pressed Brick Co., at Newburn, Ill. The assets are stated to be \$27,000 and liabilities \$69,000.

The Bierbauer Brick Works at North Mankato, Minn., has its mechanics' liens placed on same for labor by the employes, so it is reported by the Press.

The New Jersey Terra Cotta Co., Perth Amboy, N. J., lost two cars of Terra Cotta in the East River by a scow turning turtle.

Robt. C. Morris has been appointed receiver in bankruptcy for the Atlantic Cement Company, 439 5th Ave., New York.

Van Lloyd, of Morrisonville, Ill., who owns the Farmersville Brick Yard, is defendant for \$20,000 damages for striking John Heffner with a spade, inflicting serious injuries.

A landslide at the plant of the Brockway Brick Co., at Fishkill Landing, N. Y., caused considerable damage by pushing against the wall of a new boiler house and damaging it very much.

An execution has been issued against the Kohl-Hepp Brick Co., 439 5th Ave., New York, but nothing was found to levy upon. The plant of the company is at South River, N. J.

The Alexander Brick & Terra Cotta Co., South San Francisco, Cali., has been attached for \$17,000 indebtedness filed by an Oakland firm, also laborers' liens for \$600 has been filed.

FIRE! FIRE! FIRE!

Fire did damage to the brick plant of Simon Kline in West Reading, Pa.

The plant of the Standard Fire Clay Co., Fallston, Pa., was destroyed by fire, causing a loss of \$25,000.

The Sand-line brick plant at Bainbridge, Ga., owned by S. J. Warren was destroyed by fire. The loss is about \$13,000.

In the issue of Sept. 30, appeared an item that the Hiram Swank's Sons' Brick works at Johnstown, Pa., were totally destroyed by fire. This was erroneous, as the fire was confined to only a pattern house and caused only a small loss.

An overheated kiln at the plant of the Wilmington (Del.) Brick Co., caused a \$2,000 loss to the company. Charles F. Brickle is president of the company and M. D. Murphy, secty., treas., and manager. The office is at 3 E. 9th street.

The sheds covering the brick kilns of the Kissinger Bros. brick plant at York, Pa., were destroyed by fire while John, one of the brothers was attending a Masons' banquet. The loss is only a few hundred dollars and was not covered by insurance.

 THE LUCE ENGINEERING COMPANY

The incorporating of the Luce Engineering Company of St. Louis, Mo., to take over the business and good will of the G. E. Luce Engineering Company, which started in the Plymouth Building, at Chicago is another move in the right direction and it goes to show that when there is ability it is bound to succeed.

The company was incorporated about the first of September with \$35,000 capital stock to do general business in making plans, designing and erecting clay plants. The offices after the first of the year will be in the Third National Bank Building, until then they are at 421 Olive street.

The officers of the company are G. E. Luce, the president and founder of the old organization, Will P. Blair of Terra Haute, Ind., the vice-president. He is one of the best posted, if not the best, authorities on paving brick in America, that means in the world. And Peter B. Gibson of St. Louis, secretary and treasurer. He formerly held the same position with the Scott Manufacturing Company. All three officers are just the men for the positions for which they have been selected. Each will strengthen the new company and make it at once one of the leading firms in the country. A better combination of interests could hardly be had, as each are preeminently fitted for their part of the work.

Associated with the above people is Marion W. Blair, of Terra Haute, Ind. He has been the assistant engineer in the G. E. Luce Engineering Co., with Mr. Luce. He has had splendid schooling in this line ever since his common school days, and while one of the younger of us he is not so when it comes to design a good brick plant.

E. C. Peper is also connected with the new company. He has charge of the drafting department and we learn that his ability in this line is of the very best.

With the strong organization as described above, we see no reason why there can be anything but success for the Luce Engineering Company of St. Louis, Mo. Their announcement appears on another page of the Clay Record. If your plant is not working just right or you contemplate making additions to it or to build a new one they would be glad to consult with you.

BUILDING OPERATIONS FOR SEPTEMBER

Official building reports from 55 leading cities throughout the country received by the American Contractor, Chicago, compiled and tabulated, show that building operations continue decidedly active with the exception of New York City, where there is a notable shrinkage, amounting to seven million dollars, or 40 per cent, as compared with September of 1906. Leaving out New York City, there is a slight gain in the aggregate.

This shows local causes for both gains and losses, and indicates an altogether healthful condition. The loss in New York is but a continuance of conditions that have prevailed there for many months. During the past two years building there was very extensive, and this, together with difficulty experienced in securing building loans, accounts for the loss. Chicago, where more liberal financial conditions prevail with regard to real estate, shows a gain of 20 per cent. One of the most notable gains is reported from Baltimore, amounting to 63 per cent. The percentage of gains in the leading cities are indicated by the following figures: Baltimore, 63; Birmingham, 50; Chicago, 20; Cleveland, 3; Denver, 24; Detroit, 52; Duluth, 199; Grand Rapids, 96; Hartford, 772; Kansas City, 18; Little Rock, 153; Los Angeles, 9; Memphis, 7; Omaha, 18; Philadelphia, 28; Portland, 113; Rochester, 36; San Antonio, 141; Seattle, 187; Spokane, 57; Toledo, 25; Tacoma, 48. The following figures show the percentage of loss: Chattanooga, 74; Cincinnati, 12; Davenport, 59; Dallas, 14; Harrisburg, 34; Louisville, 21; Milwaukee, 8; Mobile, 48; Newark, 14; New York, 40; Pittsburg, 9; Pueblo, 48; St. Louis, 3; St. Paul, 53; San Francisco, 57; Scranton, 18; Syracuse, 16; Topeka, 9; Washington, 48; Worcester, 37; Wilkesbarre, 39.

JUSTICE FAILS TO HOLD KITTANING MAN TO COURT

The charge of forgery brought against John Wick, Jr., of Kittanning, Pa., formerly president of the Ford China Company, by J. G. Vollmer of the Colonial Trust Company has been dismissed by Justice of the Peace Campbell of Kittanning.

The charge grew out of a note issued by Mr. Wick as president of the china company to secure a loan which he himself made to the company. He signed the note for the company, being given that power under its by-laws. Mr. Wick afterward sold the note, which the company was never able to pay.

The career of the Ford China Company, now in the hands of a receiver, is involved in the bringing of the forgery charge against Mr. Wick. In May, 1905, through an arrangement with the Colonial Trust Company, the company took over the management of the china company for one year. To secure its having full control Mr. Wick says he gave the company 1,910 shares of the 2,500 he owned, the understanding being that when the year was over the stock was to be returned.

At the end of the year the affairs of the company had not gone well and Mr. Wick says the trust company refused to return his stock. He entered suit against the company to recover the par value of the stock, or \$191,000, with \$50,000 damages. This case will probably be tried soon. Pending the trial of the case the forgery charge was brought.

STUDENTS MAKING BRICK TO BUILD UNIVERSITY

The students of Wiley University, Marshall, Texas, are at present making brick for the large boys' dormitory which they will erect. This dormitory is to cost \$30,000.

It is to be five stories above the basement, 100 feet long by 80 wide, and it will be modern in every respect. As has been done in other constructive work about the grounds student labor will be largely used. Much of the brick yard force is made up students, and the class in masonry that received drill in erecting the Carnegie Library will take the lead in laying brick on the dormitory.

ASSOCIATION FOR MUTUAL BENEFIT FORMED

The fire and building brick manufacturers of northern and central Pennsylvania was organized at DuBois, Pa., under the name of Brick Makers Association of Northern and Central Pennsylvania, for mutual benefits of this district. W. I. Harvey, of Hayes Run Fire Brick Co., Orvis, Pa., was elected president, and J. D. Ramsey, of the Elk Fire Brick Co., St. Mary's, as secretary. After some discussion they arranged to meet at the Fallon House, Lock Haven. All independent brick makers of Clearfield, Centre, Clinton, Lycoming, Cameron, Elk, McKane counties are invited to attend.

BIG BRICK PLANT TO BE MADE BIGGER

With the completion of improvements now under way the output of the T. B. Townsend Brick & Con. Co's. plant, Zanesville, O., will be doubled and employment given to 100 more men. Two new kilns are now being constructed with the necessary railroad switches and improved machinery. Plans are also being prepared for new buildings. It is expected that the work on the improvements will be completed by spring.

PURCHASE BY ST. LOUIS TERRA COTTA COMPANY

The St. Louis Terra Cotta Company has purchased a tract of vacant ground about six acres in extent on the west side of Sulphur avenue, between and adjoining the Missouri Pacific and Frisco tracks, in Cheltenham, as a site for a new plant. The property was conveyed to the company by Morton Jourdan, the attorney, in three parcels, for a total consideration of \$28,125. Mr. Jourdan bought one piece of the tract a few weeks ago. He was in Europe at the time, and, although it was surmised that he was acting for some manufacturing concern, the fact was not established until the titles were transferred yesterday.

The tract has a frontage of about 600 feet along Sulphur avenue between Manchester and Wilson avenues, and a depth of about the same distance. It is cut in two by the Frisco right of way. It is close to the present plant of the St. Louis Terra Cotta Company. The company is preparing plans for a new plant which will represent an investment of about \$150,000. This is to be built within a year and will be used for the manufacture of terra cotta products. The site is well located for switching facilities, and is in the heart of the clay-products industry of the city.

CERTAIN CLASSES OF MATERIAL NOW VERY LOW IN PRICE

"The building material business is far from being satisfactory this fall, but we look for biggest building season we have ever had next spring and summer," said Warren B. Ferris, Columbus, O., sales agent for about 23 manufacturers of facing brick, roofing tile and terra cotta. "There are many reasons why the building has fallen off during the present fall. Money of course has been very tight, Wall street has been panicky and the railroads are largely responsible in discouraging building. Labor troubles have also entered into the situation and altogether I believe this has been the worst season we have ever had."

"This situation has naturally brought the prices of our material down until they are now lower than they have been for many years and this will have a tendency to cause more activity in building in the spring. The prices are fully 20 per cent lower now than they were six months ago. I do not believe the price will go up in the spring but I should say that it will go even lower for a while. The manufacturers are fairly well stocked up now, and by running their plants all winter, their sheds will be overflowing in the spring. operating on small capital will have to realize. This means that the price will not go up, at least not until the sheds are pretty well cleaned out.

In addition to this there are a great many buildings planned that would have gone up this fall but for the tight money market, that will be started next spring under more favorable conditions. Money is even now loosening up, but it is too late now to affect the building trade much this fall. But this, with the low prices of material, will surely start things next spring. I would advise persons contemplating building in the spring to get a good early start for when the material begins to be cleaned out of the sheds the prices will surely go up."

Building material men generally charge a great deal of the fall off in business this fall to the railroad agitation. The railroads are responsible for the conditions in-so-far as they fail to furnish sufficient cars to move all shipments of material. This they think is due, either intentionally or otherwise, to mismanagement. "It has been usually the case that when a firm asks for eight or ten cars for a special shipment they can not get more than two or three. At the same time there are places where the cars are strung along sidings for miles and out of use except to cause congestion. This does not look like very good operating management, but it may suit the present policy of the roads in the face of agitation for governmental control."

CHAMBER GOING AFTER DENVER BRICK TRUST

The chamber of commerce will probably take up an investigation of the methods of the brick trust now operating in Denver as soon as the coal trust has been brought to terms. George C. Manly and Charles S. Pitscke have requested the chamber directors to insert their probe into the brick combine which is operating with the aid of the bricklayers' union, it is charged, to Denver's damage in a commercial way. The chamber will make some preliminary investigations before appointing a committee to set to work in earnest.

UNUSUAL ACTIVITY IN SILICA BRICK

Because of a number of large orders recently placed with the Robinson Clay Products Co., Akron, O., for silica brick, this company has been working plant No. 8, where this product is manufactured, full capacity in order to fill its contracts. Nearly a million silica brick are turned out every seven days from the kilns at this plant, and a double shift of men are employed in the rush.

Hon. J. Alexander is the inventor of silica brick, and he was engaged exclusively in its manufacture up to the time his interests were merged with that of the Robinson Clay Products Co., about three years ago. The material used in the brick is clay, white ground pebble and lime. The silica brick, once made, is indestructable and is used in lining blast, steel and glass furnaces. It requires many degrees of heat to burn the brick, and a vast amount of coal is used in the burning, each kiln consuming about 70 tons. Some time ago the company experimented with gas in burning the silica brick, but it was found impracticable. No other brick known will stand the great heat which is given to silica. The common shale brick would melt and run together under it.

There are seven kilns used in burning this brick, and each kiln has a capacity of over 100,000.

The silica plant is located along the Valley railroad in East Akron, north of the mammoth new sewer pipe plant the company is building.

The white stone pebble used in the manufacture of its product is secured from beds the company owns south of Barberton.

INDIANAPOLIS HEAVY LOSER ON FALSE PAVING REPORTS

It has been discovered that Indianapolis, Ind., has been robbed of thousands of dollars by the falsifying of the reports of inspectors in connection with the repair of asphalt streets.

Just who falsified the records is not known. The inspectors say they lent their books to the superintendent of the Western Construction company, which has the contract for the repair work, and the company has discharged the superintendent who was in charge. The city engineer is holding back \$10,000 from the company till the records can be straightened out.

The changes in the books were bunglingly made. In some cases where the space repaired was 1 x 1 foot, the figure was made 9 x 9, increasing the work eighty-one square feet. In other cases the figures were made even higher. Once or twice the patches supposed to have been repaired were larger than the street is wide. The city pays for the repairs by the yard, and the bill for July alone was \$18,000.

AN ILLINOIS BRICK MANUFACTURER 103 YEARS OLD

Patrick Clary, of Guilford, Ill., who is probably the oldest man in Winnebago county, has been ill for a few weeks, but is now all right again and able to be out. Mr. Clary lives on what is known as Bean street, in Guilford, about a mile and a half east of the high bridge and gives his time to the active management of a yard owned by him.

SUCCESSFUL RUN AT WESTERN STONEWARE CO. IS BREAKING ALL RECORDS OF THE BIG CONCERN

With the plants of the Western Stoneware company being pushed to their fullest capacity and still days and weeks behind in their orders it again becomes evident, if such evidence was needed, that the local men behind the great merger of western stoneware plants knew what they were doing when the Western Stoneware company was formed and that they are delivering the goods in accordance with their promises.

Evidence of the prosperity of the company in which so many local people are interested, is everywhere apparent. The second quarterly dividend has been declared and yet the company is but in its infancy. New territory is continually being entered by its salesagents and the orders within the past few weeks have broken all records. The plants are being pushed to their utmost, and still the orders are unfilled.

The developments in the advance of the organization will be appreciated by Monmouth, (Ill.) people generally for they realize how dependent the prosperity of the community is dependent upon the success of its manufactories.

Only within the past few days monster orders, which have sent past records of the company scurrying from the boards, have been received. One came from a big concern in New York, and was for a big shipment of ware which will keep the plant making it busy for sometime. Another order equally as astounding in its totals came from St. Louis. But these two big orders, interesting as they are, are only a portion of the daily orders received.

Thus it will be seen that the new concern is beginning to make itself felt in the marts of trade and its ware thoroughly tried and popular wherever it has been used cannot fail to make good and bring future orders. Officials of the company, which had its headquarters in this city, are more than pleased with the outlook for business and are confident that the concern is just entering upon a long era of prosperity. The two local plants are being pushed to their fullest capacity and new men are being continually added to the pay rolls in an effort to catch up and keep even with the ever increasing volume of orders.

OIL USED IN THE NEW CONTINUOUS KILN AT SEBRING POTTERY

The new continuous decorating kiln, recently built by the Sebring, Ohio pottery, has been given a thorough trial. It required but 15 minutes to burn a crate of decorated ware. The usual time required to burn a kiln of such ware is from 6 to 8 hours and but one kiln can be burned each 24 hours owing to the fact that the kiln must cool before it can be emptied. The fuel used in the burning of the new kiln is oil. A crate of ware is placed in the kiln every 15 minutes as one emerges with ware burned. There are several crates of ware passing through the fiery furnace at all times. The kiln is expensive but successful, and the ware is pronounced the finest.

SEASON UNSATISFACTORY IN NEW BRITAIN AND BERLIN DISTRICT

The brick-making season in New Britain, Ct., and Berlin district, which is now approaching its close, has not been satisfactory. Although manufacturing operations are usually continued until November several of the concerns have already shut down and discharged their employees. Other companies will follow at an early date. The reason for the early closing is that the kiln sheds are stocked to their capacity with burned and unburned brick.

Most of the local brick manufacturers who were formerly members of the Central New England Brick Exchange of this city entered last spring into a contract with the Federal Brick Company of Rhode Island, which agreed, under various conditions, to take their product for a period of five years. One feature of the contract is that the Federal company pledges itself to ship enough of the burned brick to permit the plants to be kept steadily in operation. The market has recently been so dull and the demand for brick so limited that the Federal company has found it difficult to comply with this requirement, and the result is that the stocks of manufactured brick on hand in the yards are so great that in many cases further manufacturing operations cannot be continued. Another proviso of the contract is that all brick shall be paid for within sixty days after the burning.

SCHOOL POTTERY PLANT

The plans for the new technical high school at Cleveland, O., contain provisions for a model pottery plant, which is to be made a feature of the instruction in manual training in the Cleveland public schools hereafter.

The new plant will be in the applied art room, where also will be the art metal work and leather modeling sections. The pottery equipment will consist of a kiln set of wheels, and apparatus for hand building, casting and throwing pottery.

J. W. Vickerman, the new superintendent of the machine shop, is in the city. He comes to Cleveland from the Burt Manual Training School in Sagnaw, Mich.

A NEW TENNESSEE FIRE BRICK WORKS

The Harley Pottery Company, Nashville, Tenn., which decided a few weeks ago to engage in the fire brick business, has been delayed somewhat in carrying out its plans by the enormous demand for the products now being made. Mr. Harley states that the demand for jugs is the largest ever known, and to supply this demand every attention is demanded. The Carolinas, Georgia and practically all the Southern States are heavy jug buyers in the Nashville market. The prohibition laws of some of the states have served to shift the demand to other points, but Mr. Harley states that, regardless of the laws, the demand for jugs increases every week. The plant is now operating day and night, and every minute is working to its capacity.

Mr. Harley states, however, that the plan to engage in the fire brick business is only temporarily delayed, and that later in the fall he will begin the erection of a large plant for the manufacture of fire brick. The clay found in Henry, Carroll, Humphrey and Dickson counties is the best in the world, for fire brick purposes, and he will develop the industry on an extensive scale.

SAND OR LIME BRICK OR BLOCK NEWS

A plant for the manufacture of Hydrated lime is being erected at Bethlehem, Pa.

Cheyenne, Wyoming, has two cement brick plants in operation at the present time both doing nicely.

The plant of the Millholland Brick Co., at Marion, Ohio, has been leased to Harbeson, Morris & Co., who will manufacture a patent-plaster board.

The Belt Line Brick Co.'s plant at St. Paul, Minn., has just been completed by the American Sandstone Brick Mch. Co., of Saginaw, Mich., and M. C. Mercier of Saginaw is in charge.

The Marysville (Cal.) Sand-Cement Block & Brick Co., has been organized with \$50,000 capital stock. Michael Reisinger is president, F. B. Kupser, vice-president, J. J. Morrissey, secretary and J. P. Arnoldy, treasurer.

Alderman Issac Bacharach was the highest bidder at the public sale of the Old Ventnor Brick Plant at Atlantic City, N. J. He bid \$30,000 for it. It is supposed the purchase was made in the interest of the Atlantic Lumber Co.

The Inter-State Pressed Brick Co., St. Paul, Minn., has been incorporated with \$10,000 capital stock to manufacture cement brick and artificial stone products. The officers are F. T. Day of Waseca, Minn., president, G. L. Rolfe of Spokane, Wash., vice-president and C. H. Watson of Waseca, Minn., secretary and treasurer. The main office is in the Home Life Bldg., St. Paul, Minn.

J. A. Corley, has succeeded his son, R. L. Corley, in the management of the Owensboro (Ky.) Sand-Lime Brick Co.

The Rochester (N. Y.) Composite Brick Co., whose office is in the Exchange Place Bldg., is among the most active in that city in the supply of brick, concrete blocks, sills, Lintals, etc.

Oklahoma City, Okla., is competing with Dallas, Texas, for the location of a large concrete brick manufacturing plant to be erected by Charles W. Jones and associates of Charlotte, N. C. The brick to be manufactured has recently been patented.

The plant of the Laketon, (Ind.) Sand Lime Brick Co., is to be removed to Anderson, Ind., as the railroads of Laketon refused to grant switching facilities and declined to aid the plant in any way, therefore the plant was not profitable to the stockholders.

Raymond L. Corley, secretary and treasurer of the Owensboro (Ky.) Sand-Lime Brick Co., since it first began business has resigned his position and is now the general manager of the Janesville (Wis.) Granite, Brick & Stone Co., having already moved there.

At Brooklyn, N. Y., a plant will soon be in operation for the manufacture of brick from sea-sand. In the past sea-sand brick have not been successful on account of the lime in it. This matter is said to be settled and the plant now under erection is said to turn out 240,000 brick daily.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

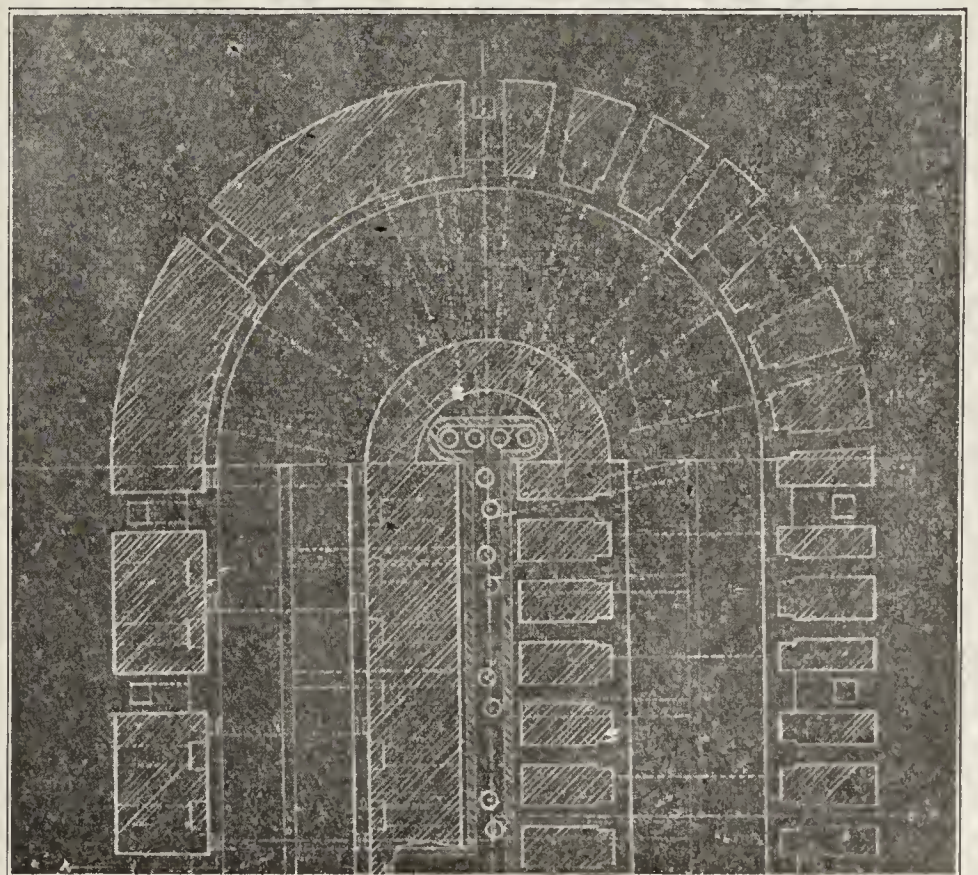
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

MISCELLANEOUS ITEMS

J. B. Northop, 813 North 25th street, Birmingham, Ala., is in the market for brick machinery.

A company with \$10,000 capital stock is being formed at Columbiana, Ala., to build a brick manufacturing plant.

The Manson (Iowa) Clay Works has put in a large new tile making machine at their plant. This will than the capacity.

J. F. O'Keefe, Pocatello, Idaho, has a 250 acre deposit of shale which he wishes to have developed and will sell same or organize a company with the right parties.

Teams were put to work last week on the building of the switch track for the Carlyle (Kansas) Brick Co.'s plant and a force of men put to work cleaning off the ground.

The Luverne (Minn.) Brick & Tile Co. has been incorporated with \$50,000 capital stock. Incorporators are R. B. Hinckley, R. S. Hinckley, C. W. Sheriff and John Sheriff.

I. S. Finkel Marshalltown, Iowa, has installed a Fernholtz outfit in their plant, furnished by the Fernholtz Brick Machinery Co., Boyle Ave. and Old Manchester Road, St. Louis, Mo.

Supt. Frank McDonald of the Workhouse at Minneapolis, Minn. has revived his pet scheme for the establishing of a brick yard plant at the workhouse. He asks for \$15,000 to build same.

The Mitchell Clay Manufacturing Co., St. Louis, Mo., are to rushed with orders that they have found it necessary to make new installations of machinery at the plant and are now preparing for same.

The Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., have recently shipped to Los Angeles, California, one of their improved heavy and large 10" x 20" crushers, and a 36" x 12' Revolving Screen.

The Stein-Williams Brick Co. Cleveland, Ohio, has been incorporated with \$60,000 capital stock. Incorporators are C. C. Williams, M. M. Egger, F. S. Wellmere, Frank J. Manes, Wm. H. Cromwell and Guy W. Shanks.

George A. Mowatt, Chewelah, Wash., has purchased Dr. S. P. McPherson's interest in the Chewelah Brick Works. The new company will rearrange the yard and add some more machinery to the plant which will enable them to manufacture tile.

The Perth Amboy Fire Brick Co., of Perth Amboy, N. J., have recently equipped their plant with one of the "Martin" Heaviest and best Style "A" double mould entrance Steam Power Brick Machines, installed by the Henry Martin Brick Manufacturing Co., Lancaster, Pa.

The Sayre-Ford Manufacturing Co., of Camden, N. J., are installing on their plant the "Martin" Patented Rack Pipe Steam Brick Dryer system, having a holding capacity of 40,000 stiff mud brick daily furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

The Stockport (Iowa) Tile & Brick Factory will be located on the site of the factory destroyed by fire. The company is capitalized at \$10,000. C. W. Wheatley is president, Miles Shelman vice-president, R. M. Harlan secretary, and William Brewer treasurer. Work is already commenced in cleaning up the debris.

The Muskogee (Ind. T.) Vitrified Brick Co., is enlarging its plant which is located in the north part of the city.

The Missouri Slope Brick & Tile Co., Dickinson, N. Dak., has increased its capital stock from \$35,000 to \$75,000.

The Consolidated Brick & Tile Co., has moved its principal office from Winston-Salem, N. C., to Pine Hill, N. C.

The Pierre, S. Dak., has completed the burning of the first kiln of brick and are now delivering them to the trade.

The Maryland Terra Cotta Co., Baltimore, Md., has bought additional land adjoining their plant so as to enlarge same.

The Guthrie (Okla.) Brick & Tile Co., are manufacturing 6,000,000 brick to be used in paving some of the streets of Guthrie.

The Wiggins (Miss.) Brick & Tile Co., have closed a contract for machinery to be installed in their plant at an early date.

The West Coast Brick & Tile Co., Centralia, Wash., has been organized and C. A. Bartz is the president. The clay is said to be of a very fine quality.

The Oskaloosa (Ia.) Paving Brick Co., is now engaged in getting out a few kilns of tile for their fall and winter trade, the demand for which is very large.

The new brick works at Cynthiana, Ind., has been started up and is now working very satisfactorily. They expect to fill orders the later part of the month.

The brick yards during the Hudson River shut-down the first of the month as per the agreement of the manufacturers and will not operate same again until next spring.

The Alonzo Curtis Brick Co., Grant Park, Ill., has orders on their books for 20,000,000 brick which with one exception is the largest amount of advance sales they have ever had.

Mr. Irwin of Peabody, Kansas says he will build and operate a brick plant at Hutchinson if the proper shale can be found. Tests are now being made by a competent brick man.

From a reliable source it has been learned that a company will be formed to make mud brick at Findlay, O., on the sight of the Hydraulic Press Brick Co., and using their old kilns.

The Webster Fire Brick Co., (So. Webster, O.) has been compelled to close down its plant on account of the drought. The wells and creeks are dry and water for steam making cannot be had.

The Wise County Brick Co., Bridgeport, Texas, has been incorporated with \$60,000 capital stock. Incorporators are C. W. Martin, J. W. Patterson, W. O. Stephens and J. D. Montrap.

The Crush (Texas) Brick & Tile Co., has been incorporated with \$15,000 capital stock. Phil. H. Foscoe is president, Howard Templeton, Vice-president, W. B. Weaver, secy., and manager.

The Topeka (Kansas) Commercial Club is busily engaged in finding a shale with a 10 mile radius of the city that is suitable to make pottery. A large stoneware company is figuring on going to that city.

The Kinzua Valley Paving Block Co., was incorporated at Camden, N. J., with \$200,000 capital stock to manufacture paving blocks, building blocks and brick, etc. The incorporators are M. A. Madison, Clarence D. Lamb, and S. E. Lewis.

G. E. Carlyle is organizing a company at Olive Hill, Ky., for the manufacture of fire-brick.

The machinery for the San Angelo (Texas) Brick Co., has been installed and a daily capacity of 30,000 brick is made.

William Holden has bought of Wm. Schultz the Wayland (Ia.) Brick & Tile works. Immediate possession was taken and the plant will be put into full operation.

The United Fire Brick Co., Uniontown, Pa., has been incorporated with \$50,000 capital stock. The owners are J. B. Palmer of Uniontown and John Palmer of Pittsburgh.

L. E. Bennett of Millsap, Texas, is organizing a brick company for Brownwood, Texas, where an excellent body of fine shale has been located. The plant will cost \$22,000.

A new \$40,000 brick works is to be built at Carlisle, Ia. The company has been granted a franchise to use the streets for electric line and has leased land near the town for a clay bank.

Straight Bros., Fonda, Ia., will build a \$40,000 tile plant about a mile and a half north of Auburn, Iowa, and east of Grant City. A right-of-way has been secured to the C. & N. W. Ry.

The Drury Brick & Construction Co., York, Pa., has issued bonds to the amount of \$20,000, giving a mortgage on plant for same and will make extensive improvements that will increase the capacity of the plant very much.

John K. McGarth, president of a brick company at Shreveport, La., has been at Beaumont, Texas hoping to find a clay deposit near there on which to establish a plant to manufacture both common and pressed brick, burning same with gas.

The Deer Creek (Minn.) Brick Co., have installed a new brick making machine in their plant.

The New Era Vitriified Brick Co., Detroit, Mich., has been incorporated with \$150,000 capital stock.

The new brick yard at Fromberg, Mont., under the supervision of Mr. Wood, is nearing completion.

The plant of the George Kruse Brick Co., Decatur, Mich., has been sold at public sale to Will Wright for \$530.00.

The Providence (Ky.) Pressed Brick Co., will double the capacity of their plant in order to keep up with the demand for their goods.

The Peoria, Ill., workhouse made 800,000 brick this year, all of which are now being offered for sale. The plant is now closed for the season.

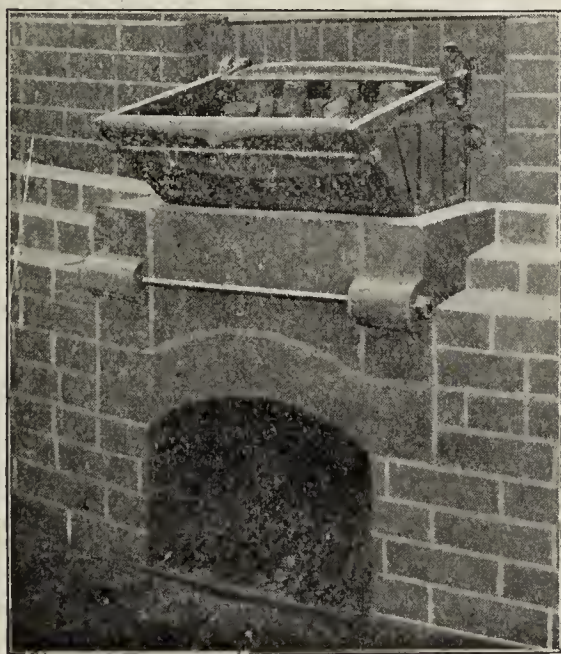
The Pocatello (Idaho) Press Brick and Mfg. Co., Ltd., has bought a 10 acre mill site just north of the city limits on the Oregon Short Line.

A. L. Bronson of the Marlin (Tex.) Pressed Brick Works states that he has recently shipped out over 300 carloads of his brick, the quality of which makes the demand.

The Lonsdale Face Brick Co., Knoxville, Tenn., has prepared to run their plant through the entire year, having constructed a large clay storage shed. Other improvements are also being made.

The Vandalia (Mo.) Fire Brick Works is to make important improvements to their plant, a new grinding pan, smoke consumer and drying system are to be added. J. E. Riggin, R. A. B. Walsh and C. W. Parker of St. Louis, to look over the plant and make the arrangements.

**The GILLETT DOORLESS
Hot Air FIREBOX For
Blast Kilns**
Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog, and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

**DIRECT HEAT
DRYERS**

**FOR
BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description. Detroit Car Building and Equipment Co. Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others. Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write Brick and Tile Machinery Secor, Ill.

FOR SALE

One Quincy Clay Gatherer and Plow. Brand new, in use only two weeks. Address, Elk City Brick Co. Elk City, Kansas.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars. American Enamelled Brick & Tile Co. 1 Madison Ave. New York

A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA

WANTED—Manager and Superintendent who can introduce capital to equip a complete Brick making plant on my clay field, of 60 acres, proved at 40 feet and analyzed by The Henry Martin Brick Machine Mfg. Co., Pa., U. S. A., who recommend using the following outfit: Martin Style "P" Disintegrators, and Style "A" Brick Machine for Moulding, and the Martin Steam Brick Dryer.

The situation of the field is close to the railway siding of Claysmore, on the C. N. R., 6 miles from Vermilion City, the bull's-eye of the famous Saskatchewan Valley, and the Vermilion District, where bricks are now selling for \$20.00 per thousand and great demand at that Address,

ALEXANDER EASON,
Pioneer Builder and Contractor
Vermilion,

N. W. Canada

Alberta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars. GREAT EASTERN CLAY CO. 39 Cortland St., New York.

50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

H. H. WALSH
131 Lander St., Newburgh, N. Y.

WANTED

Superintendents, Managers; Experts, also office and Salesmen with brick, tile, pipe, or building material experience. Write, HAPGOODS, 305 Broadway, New York City, or 1010 Hartford Bldg., Chicago, Ills.

FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address LOCK BOX 29 CARE OF CLAY RECORD Chicago, Illinois

BRICK YARD FOR SALE

Old established yard in good town of 5,5000 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address CHARLES MCNEAL Maryville, Mo.

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address GEORGE BARNEY, Leesville, La.

WANTED

Wanted Stoneware Potter—both wheel and Kiln men, Write to SPOKANE POTTERY CO. Clayton, Wash.

WANTED

A traveling salesman, a man who has a general knowledge of the brick business. Permanent employment.

Address: B. C., care Clay Record Chicago, Ill.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO., Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address ATLAS CAR & MFG. CO., Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south. L. T. LEE, Zenith, Ga.

PLANT FOR SALE

A good steam brick plant for sale, Chambers Bros. Co. Brick machinery, engine and boilers in first class order. Lease expiring.

JOHN HANARTY & SON
58 and South Streets
Philadelphia, Pa.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:

4. J. CARE OF CLAY RECORD
Chicago, Illinois

MACHINERY FOR SALE

Soft mud outfit, manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander, Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to

BALTIMORE VITRIFIED BRICK CO.
Baltimore, Md.

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
Redfield, So. Dak.

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS,
Streator, Illinois

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Joggers quoted.
R. A. HART, 41 White St.

No better made, run from \$3 and \$10, to 4 Wheel, \$3.00 5 Wheel, \$3.25 Guaranteed. Sold by all dealers BATTLE CREEK, MICH

BUSINESS WANTED

I can sell any business or real estate that is salable, no matter where located. I reach the people who buy. A trial will convince you. Established in 1881. If you want to buy or sell, address,

FRANK P. CLEVELAND,
1726 Adams Express Building
Chicago, Illinois

FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete, 50,000 vitrified brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant.

LIBERAL BRICK & TILE CO.
Liberal, Mo.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,

Care Clay Record, Chicago, Ill.

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.

BAKER IRON WORKS
Los Angeles, Cal.

CARS WANTED

WANTED—Second hand cars and truck. Give lowest price and condition in first letter.

Box 81.
Independence, Iowa

GAS ENGINE FOR SALE

FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Answer,

Gas Engine, care Clay Record
Chicago, Ill.

BRICK PLANT WANTED

At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacent, plenty of artisan water. For information address:

WENONA COAL COMPANY
Wenona, Illinois

FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. Sandusky Portland Cement Co.

Sandusky, Ohio

FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

709 Chamber of Commerce,
Astoria, Oregon



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CHICAGO, OCTOBER 30, 1907.

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Single Copies, 10 Cents

THE MECHANICAL TREATMENT OF LIMEY CLAYS

The modern tendency in dealing with clays which show defects due to the presence of lime in the finished brick, is to adopt one of two methods of treatment, according to the condition in which the lime or the material from which it is derived occurs in the raw clay. This differentiation at the very commencement of the treatment is of comparatively recent origin, but in it lies the main reason for success or failure in the treatment of this class of clay, says a writer in the *British Clayworker*.

In clays containing chalk or other lime compounds of a soft and finely powdered nature, it is usually sufficient to grind up the whole mass fairly fine, and to make it up almost at once into goods in the ordinary plastic process, but if the source of the lime is found to be in the form of stones or pebbles, or even granules of limestone or similarly hard material, this course of treatment will not serve to produce good brick and tiles.

For clays containing lime compounds in size larger than one-twentieth of an inch in diameter, and of a hard, stony nature, special treatment is needed, this treatment varying to a large extent with the size of the impurity and with its nature, as well as with the relative plasticity of the clay as a whole.

If the clay is very plastic and the percentage of impurities not too large, the whole material may be ground finely and used direct, the lime compounds acting as a material which makes the clay somewhat leaner, and therefore better to work than an excessively plastic clay. If on the other hand the clay is somewhat lean it may be necessary to remove the lime compounds in order to increase the plasticity of the remaining material, as well as to lessen the possibility of damaged goods, owing to the blowing action of the lime in the finished brick.

It is at this stage that the importance of choosing the correct kind of machinery for working the clay is so vital to the interests of the brick and tile manufacturer, for the installation of inefficient or of unsuitable machinery may easily make all the difference between his success and failure.

CLAYS WITH LARGE STONES.

When the clay contains a noticeable proportion of stones larger than one inch in diameter, it is generally desirable that these should be picked out by hand or separated by means of a special machine which will remove without crushing them.

Hand picking, though slow, is relatively cheap, and with reliable and conscientious men is very effective. As so much depends upon the thoroughness with which the pickers work, it is often desirable to reward those who show special diligence by means of a bonus system, in which the percentage of material to be removed from the clay being known, the workmen engaged in picking it out are paid according to the proportion they remove. Thus one firm pays its pickers on a special piecework plan as follows:—The clay contains on an average about 9 per cent of removable limestone, and the men are paid not by the number of tons of clay they pick but by the number of tons of limestone they accumulate; 3s. 6d. a ton being the actual price paid in this instance in addition to their standing weekly wage. As the place where the picking is carried out is difficult of access to men carrying loads, and the stones when paid for are removed safely out of reach of all the workmen, there is little likelihood of the men bringing stones from other sources and pretending that they have been taken out of the clay, and a further confirmation of the accuracy of the payment made is obtained by checking the number of tons of clay actually passed through the mills. This system of bonus has worked admirably in this particular instance, but it can obviously be only applied in the case of clays containing stones which are easily visible to the workmen engaged to remove them.

SMALL STONES AND THEIR REMOVAL.

For clays containing smaller stones down to one-eighth of an inch diameter, the use of a clay purifier or stone separator is to be preferred, though these machines always cause the wastage of a rather important proportion of clay. There are many patterns on the market, but all the machines used for this purpose are designed with two principal objects, and upon the extent to which they fulfil these aims they must be judged.

The first requirement of a stone separator is that it must work continuously, and not require to be stopped and emptied at frequent intervals. The second requirement is that it must use but little power. Both these requirements are largely met by the use of either perforated rolls, through which the clay is pressed whilst the harder stones are carried round on the roller, and scraped off automatically at a convenient part of the revolution, or of a pugmill with a perforated barrel which forces the clay through the perforations, and expels the stones together with some clay at the further end of the mill.

The first pattern of stone separator is liable to crush the stones, and send them through with the clay; the second pattern tends to waste clay by not completely separating it from the stones. Other appliances have been placed on the market from time to time, but they are likewise subject to these disadvantages, or they are too expensive in operation, because they require the attention of two or more men to keep them clean. Hence there appears to be a large scope for the production of a machine which shall effectively remove small stones from clay without crushing them, and at a considerably less cost than the old-fashioned but very effective way of washing the clay and allowing the stones to settle out from the slip.

When stone separating machines are used, it is also essential that they should be built of such a height as to be easily cleaned. Many of those in use at the present time are far too high for efficient opening and cleaning.

CRUSHING ROLLS AND THEIR ADJUSTMENT.

For most purposes the clay, after separation of the larger pieces of lime compounds by either of the methods just mentioned, must be pressed between crushing rolls so as to reduce it to a sufficiently fine state. These rolls must be adjusted as regards diameter and the distance between them to suit the peculiarities of individual clays, and in some cases two, three or even four pairs of rolls must be employed when very strong clays are being treated.

It is not always desirable to have both rolls in a pair of the same diameter, and where much reduction has to be carried on with a clay of considerable hardness, or containing hard materials, it is more economical to carry out the reduction with several pairs of rolls, each pair having the rolls set closer than the pair in front, so that the reduction of the material may take place gradually and produce a less strain on the rolls than when a single pair set very close is used.

The three arrangements of rolls for clays containing much limestone or other lime compounds are shown diagrammatically in the three accompanying figures, in which Fig. 1 represents the ordinary rolls, Fig. 2 a combination of rolls and stone separator, and Fig. 3 a combination of pan, mill and rolls.

Where the whole of the material can be made up into bricks or tiles, and the non-clayey matter is fairly well distributed and not too hard, the arrangement shown in Fig. 1 will usually be all that is demanded. It consists of one pair of rolls set fairly close, according to the nature of the material, and a second pair each of a different size (though this is to some extent optional) set much closer, and for

many clays not more than one-twentieth of an inch apart. After passing through both these sets of rolls the material enters a pugmill or mixer (shown below the rolls), and from thence is delivered to the makers, or is made into wire-cut goods direct from the machine. Sometimes a separate mixer is necessarily inserted between the second pair of rolls and the pugmill, but this depends on circumstances, and does not alter the scheme of working, as the additional mixer is only equivalent to using a longer pugmill. Fig. 2 shows the stone separator arranged to deliver the purified clay to the crushing rolls, which in this case are set very close, as the stones having been removed, no widely set rolls are needed. As in the former instance, the rolls deliver to the pug press.

In Fig. 3 a more expensive method of grinding the material is shown, and this arrangement is only suitable for specially difficult clays, or for better class goods, for which fine grinding is needed. The use of an edge-runner mill is generally found to be too expensive for the production of the goods ordinarily made from limey clays, but otherwise they form one of the most satisfactory crushing machines, as they squeeze, crush and mix the clay at one operation. A further process of crushing is then passed through, as the material, after leaving the edge-runner mill, enters the crushing rolls, which, like those in Fig. 2, are set close together, and leaving them enters the pugmill.

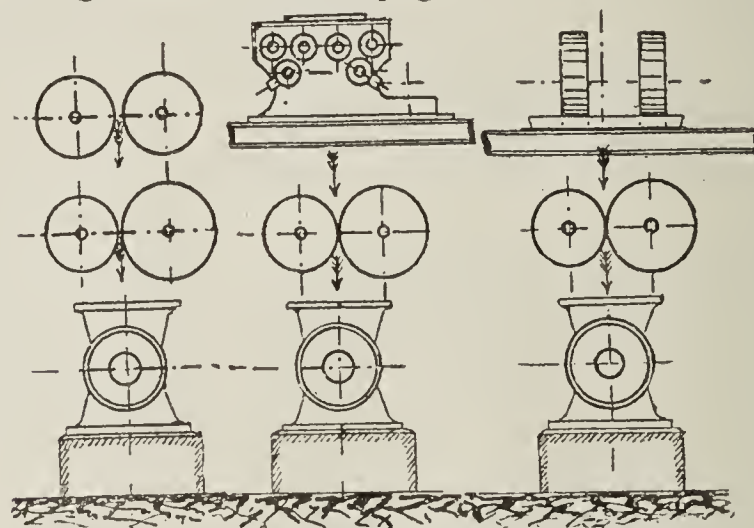


FIG. 1.

FIG. 2.

FIG. 3.

In each case it is essential for good working that the rolls should be sufficiently large in diameter (for average outputs they should never be less than 24 to 26 in. diameter), and that they are kept well dressed. One of the most frequent sources of trouble with strong clays containing lime compounds arises from the irregular surfaces of the rolls, due to their wearing unevenly, whereby the coarser particles of material pass between them without being crushed.

Numerous methods have been suggested for securing the more even wearing of the rolls, and one firm has placed a machine on the market in which the rolls have a sideways motion in addition to their ordinary one, so that whilst in use one roll gradually travels to the right and the other to the left, and vice versa, so as to distribute the wear and tear more evenly over the surface. This arrangement apparently works satisfactorily, but has not been sufficiently long in use to become really popular.

For general purposes the most satisfactory plan is to have a duplicate set of rolls, and so substitute these whilst the others are being turned true, or, failing this, there are

various appliances on the market by means of which the rolls can be trued without removal from the standards, though the disadvantage of truing them *in situ* is the danger of iron or steel becoming mixed with the clay, and so dis-coloring the goods.

The strain and wear of crushing rolls is very great when a hard clay is being worked, and when the rolls are set close, and unless they are constantly attended to their surface becomes so uneven that the rolls are of little use. This is one reason why so many sets of rolls are used in working the clay in some yards, the owners apparently not realizing that the badly worn rolls in the earlier stages cannot do their work properly without dressing; instead of this being done new rolls are added, until in one case a firm which found two pairs of rolls quite satisfactory for the first five years of its existence have gradually added to their machinery until now the clay passes through no less than five pairs of rolls before it enters the mixer. Quite recently, acting on advice, they have discarded two pairs of rolls, with satisfactory results, and are retaining them simply as spare parts to be substituted for the others, now in use, as soon as these latter become too worn. By keeping their close-set rolls well dressed and true, this firm is saving considerably in the power used, and therefore in the cost of manufacture of their goods.

One word of warning remains to be written in conclusion, namely the suggestion that rolls too closely set may do more harm than good. Such rolls spread out the impurities in the clay into "plates," and these unless broken up and well mixed with the clay by the later stages of working will actually cause more damage to the surface of the goods by blowing than would the original unflattened grains, because their surface has been increased by their alteration in shape.

In several instances the setting of the rolls slightly further apart has greatly reduced the proportion of defective goods where "blowing" of lime compounds in the clay has been the chief trouble, and it is therefore necessary that each clayworker should ascertain for himself what is the correct distance between the rolls. For most clays the final rolls should be set from one to three-twentieths of an inch part, but as just suggested there are some clays in which so close a setting is undesirable.

ORDERS ARE GREATER THAN CAPACITY OF PENN PLANT

Reports received from Lansing, Kansas, are to the effect that the state penitentiary brick plant is unable to keep up with the demand for brick at the state institutions where the construction of new buildings was authorized by the legislature last winter. First estimates on the cost of the new buildings authorized were made on the supposition that the penitentiary brick would be used and it is now probable that some of the new buildings will not be as large as was planned for the reason that brick will have to be bought on the open market. The legislature also instructed the board of managers to pave the road from Leavenworth to Lansing with prison brick and this work is taking a large portion of the output of the penitentiary brick plant. Up till this time the penitentiary has been able to furnish brick almost as rapidly as they have been needed but as many of the large buildings are now just well under way the demand is larger than it has been.

THE ACOUSTIC PROPERTIES OF BRICK TILE AND TERRA COTTA

Although a great deal is known concerning the acoustic properties of wood, and of various metals used in construction, it is not a little remarkable that analogous properties in brick, tile, faience and terra cotta should be so little understood. This ignorance arises in great measure from the circumstance that both physicists and architects have contented themselves hitherto by considering acoustics from the point of view of the shape of interiors of buildings only. Or, in a secondary way, the materials lining the walls, and such as may be regarded as capable of reinforcing sound, have received some attention. As a matter of fact, in many large buildings such things as resonant boards, reflectors, and matchboard dados are quite subservient to the chief materials of construction as often laid bare in the walls of the higher part of the building inside. Again, we commonly find that at least some considerable part of the walls is lined with clay goods in some shape, such as tiles, glazed panels, and the like.

Everybody who has studied the acoustics of large buildings admits that the chief enemy to deal with is reflection of sound, which produces echoes and general uncertainty in hearing, no matter whether the lecturer be strong or weak in voice. Consequently we find that when the building having been newly put up, the acoustic properties are bad, the first thing the architect flies to is that which he understands best, namely wood. During the present century there has been quite a boom in that material, though we ought not to forget the metal reflector placed over the pulpit in St. Paul's Cathedral, which has been so successful in that particular case.

Yet, but a little consideration of some elementary problems in physics suffices to show that wood is by no means always desirable, or can be in any way successful, in the interior of many edifices. Wood is a great reinforcer of sound by reason of its elasticity, but that very property is disastrous in certain interiors.

Sound is most perfectly reflected from smooth surfaces, and when acoustics of the interior are bad owing to form of construction, and reflection is wanted, what could be better than glazed surfaces? Large glazed tiles, or faience work in panels, are most admirably adapted for the purpose, but how often do architects use them for their acoustic properties. On the other hand, when owing to interior shape of the building reflection from the walls is not wanted, where can any better material than porous clay-goods be found? When echo is too manifest, and the building is largely utilized for the performance of music, we commonly find that attempts are made to lessen it by using drapery. An interior designed by the architect to show off its noble proportions, or enriched by the frescoes of some Royal Academician, or embellished by beautiful marble panelling and mouldings is thus ruined. For the right interpretation and appreciation of orchestral music it is absolutely essential to stifle echo at its birth. We should hear only that which proceeds direct from the executants to our ears, and the harmony should not be disturbed by the reverberation of the musical notes from side to side of the building. It is to be noted that intensity of the sound is not the leading factor in such a case

as this. If a little water be violently thrown on to the surface of a smooth-faced wall it glances off, and the same thing will happen with a large quantity; on the other hand, if either the large or small quantity be thrown on to a wall having a porous surface much in either case will soak in. And so it is with sound. If the grand interior which we have just been alluding to were constructed of porous clay-goods, the architect, the Royal Academician, and the embellisher still have their chance, and the drapery could be done without.

We do not ask modern artists, with all their facetic and æsthetic ideas, to succumb to science or to pander to the worker in clay, but we are perfectly justified in reminding them that many of the ancient works of art which they all but worship are the work of clayworkers. They seem to forget this. Their ideas are confined (like the latest craze in art) in straight lines and angles; they have set up for themselves a certain number of cast-iron regulations, which may be likened unto the by-laws of a County Council. They can see art in ancient clay work, but not in modern, that is because they have moulded themselves into that train of thought. Once get rid of that, and we can furnish both the artist and architect with materials such as the ancients had in the interior of their buildings, which were then, and are now, in many respect acoustically perfect, which were then, and are now (in ancient structures) admired for their artistic beauty.

We have said that clay work is often superior to wood work for acoustic purposes; we will substantiate that point by referring more particularly to the merits and defects of both for the uses named. Let us begin with wood. Here we have a material with a fiber; we cannot get wood without fiber. Fibers act as wires and are conductors of sound like the water. Consequently if sound strikes a match-board surface, much of it is immediately given a biased direction in the direction of fibers. This bias is useful when the wood is to act as a species of sounding-board, but when echoes are to be minimized (as is more frequently the case) it is to be deprecated. Wood with knots is better as retarding the propagation of sound within the fibers, than is wood with straight fibers.

But for sound-proof walls, if wood is to be employed, it has to be cut in such a way as to make the general construction somewhat expensive. Now all this can be done away with if such a material as terra-cotta be employed. The velocity of sound in a body is a fair index of the use of that body for acoustic purposes. As would naturally be supposed, the velocity is not so great in loosely compacted materials as those more closely aggregated. If the object in the wall be to stop sound from going through it, then it might be lined with exceedingly porous terra-cotta. If on the other hand, the surface is to be of neutral character, terra-cotta, with a "semi-vitreous" face is more suitably employed. If, as in many small country churches, the upper parts of the wall above the dado are to be left bare, the brick showing should always have a fairly hard surface so as not to soak in the sound too much. But, for a church having a central dome, underneath the center of which the pulpit is to be usually placed, the interior of the dome if left bare (commonly the case with small churches) should be

made of strong rubber, and we should not object to the light porous kieselguhr brick for such a purpose.

It may be taken for granted that the velocity of sound is greatest in hard brick, such as ruabon-red, metalline, hard blues, firebrick and stocks and least in gaults, ordinary red, and sand rubbers. To recapitulate, therefore, the former class should be employed for conducting and reinforcing sound, and the latter for the reverse as sound-proof materials, and in stifling echoes.

Majolica and faience, when used in broad and flat surfaces, must increase echo, and when used very thin must be fairly resonant; when much broken up, however, either by frequent jointing, or when projecting in pattern, sunk or raised, its effects must be mainly of a neutral character.

The problem of the obnoxious party wall may be readily solved by using soft brick jointed with good mortar, taking that the wall is solid throughout; the difficulty of noise in flats from one floor to the other might be very considerably done away with by using majolica and faience ceiling mouldings for all angles, and by constructing the face of the wall of the porous brickwork, faced by plaster of a more or less porous character. Sound reflectors for public buildings, not for reinforcement of sound, but for giving it direction, would be more suitable when made of porous earthen ware, and this would be much less unsightly than metal reflectors and tubes.

In short, the capabilities of clay goods in the directions indicated for assisting and modifying sound, are much more worthy the attention of architects than has hitherto been thought; less worthy materials have had a long trial, now give "brick, tile and terra-cotta" a better chance.

FEDERAL BRICK CO. ALL O. K.

Virgil M. Palmer, secretary of the Federal Brick Company, has returned to New Britain, Ct. from Providence, R. I., whither he hastened upon learning of the embarrassment of the Union Trust Company of that place. The Federal Brick Company will keep up its contracts and will not be affected by the embarrassment of the trust company. The trust company has been one of the backers of the Federal Brick Company and much interest has been taken in Connecticut in the situation ever since the news of its financial difficulty. In addition to the keen interest of the brick men in the institution is that of a few others who have carried an account with it or have deposits in its savings bank department. Many of the brick men hold paper of the Federal Brick Company drawn on the bank. By their contract with the Federal Brick Company their brick are paid for as they are burned with drafts payable sixty days from date. How much of this paper the local brick men hold Secretary Palmer would not say, but made the assertion that it would all be taken care of and that the trust company's embarrassment would not result in the dishonor of any of their drafts. The dullness of the brick season this year has caused much apprehension among the brick makers in the combine, lest the company should be unable to pay for all their brick as agreed. It has bravely faced the difficulties of a dull market so far.

CONDUITS MADE OF CLAY AND LAID CAREFULLY IN CONCRETE HAVE PROVED THE MOST SATISFACTORY

In a paper read at a recent meeting of the Engineering Association of the South, considerable information was given concerning the materials and methods employed in laying underground conduits for electric wires. The kinds of conduits in use the author divided into three classes—first, conduits of vegetable materials; second, conduits of metal material; and third, conduits of silicious material. In the first class are the Valentine creosoted box; the Wyckoff creosoted tube or pump log; and the paper or fiber conduit. In the second class are the Johnston sectional cast iron conduits; wrought iron pipe laid in hydraulic cement; wrought iron pipe laid in asphalt cement; cement lined wrought iron pipe; and steel or wrought iron laid in earth. In the third class are the Dorsett conduit, a combination of coal tar, pitch and gravel; the Lake conduit, terra cotta sectional; cement and stone conduit; vitrified clay conduit, both multiple and single.

Those most commonly used at the present time are single or multiple clay, fiber or creosoted wood, all of which are considered good and the choice between them is largely governed by considerations of cost. However, in localities where much water has to be contended with, creosoted wood ducts are most practical; while in streets crowded with underground pipes and which are likely to be frequently disturbed the single clay tile should be laid. The cheapest form is multiple tile laid similar to drain pipe without special foundation. Bare iron and steel pipes are subject to electrolysis.

In Nashville, single clay tile is laid in a matrix of cement upon a foundation of at least three inches of concrete and covered on the sides and top with the same thickness of concrete. This is considered by some the highest type of conduit. Its flexibility in winding around and over pipes in congested districts makes it the most desirable system, generally speaking. An additional precaution against damage by picks and shovels is furnished by laying a creosoted plank on top of the completed conduit. In Evansville, Ind., multiple tile is used. The joints of this tile are made rigid by the use of dowel pins. After the ends of the tile have been fitted together, a narrow strip of burlap or muslin is wrapped around the joints and covered with cement. This class of duct is sometimes laid without concrete, but preferably is given an entire concrete encasement. A method which has been proposed is to place concrete over the top and partly down the sides, only, giving a cross section like an inverted U; this being supposed to act as a beam to prevent settling.

Fiber conduit is laid in several different ways. One method employed in Nashville is to set forms in the excavation, place the bottom and side concrete in position before the fiber is placed, afterward filling the entire space between the side walls and around and between the fiber ducts with cement grout, the top being covered with concrete. In placing the fiber ducts, they are separated both vertically and horizontally by thin strips of wood which permit the cement grout to flow between them. A more common method is to place the ducts from one-half to three-quarters of an inch apart, in courses, and fill between them with con-

crete made of thin crushed stone, a coarse concrete being used for the outside encasement; the whole conduit being built up in layers. In either case the best results are obtained by dipping the spigot end of the fiber in hot jointing compound before coupling.

Creosoted wood duct is generally laid without any special foundation, and is usually covered before refilling, with a creosoted plank. The spigot ends should fit tight, but not to such an extent as to split when driven home. This class of duct is specially recommended where there is fear of trouble from future blasting or where the soil is so wet as to make concrete construction difficult.

Manholes, handholes and surface boxes are made in various forms, although in telephone work they are standardized both as to shape and size. Some engineers prefer rectangular holes, others round ones. Handholes or "surface boxes" are usually made very small. The depth or head room of an ideal manhole is six feet, although conditions such as drainage often necessitate less. While this head room may seem unnecessary, since most of the work in manholes, such as splicing and testing cables, is done in sitting posture, on the other hand rodding or pulling in cables is done best standing.

The materials for manholes and handholes may be brick walls and roofs, concrete walls and roofs, or brick walls and concrete roofs. In cities where water, gas and other pipes are numerous, brick walls are generally preferable, since they make the form more readily adaptable to conditions, can be built around the pipes, etc. Brick, when used for roofs, is usually supported by I beams. The duct may end flush with the inside of the manhole walls, but in many cases is recessed in the walls, the edge of the recess being round, or round-nosed brick being used, to prevent tearing of the cables.

In jointing tile conduits, cement frequently works through to the inside. To remove this the mandrel is used. This consists of two round pieces of wood, each two feet long, their diameter being one-half inch smaller than the conduit. These blocks are coupled together, a handle being fastened to one end of the front block for drawing it forward and rubber washers being placed on the back ends. The mandrel is drawn through the tile for removing the cement, and after the conduit is finished it is tested by drawing through it a hard and wood mandrel fitting the tile reasonably close.

Underground wires are placed in lead covered cables containing from 200 to 600 pairs of conductors. The rope used to draw the cable into the conduit is threaded through by means of jointing rods similar to those used for cleaning sewers, which are pushed from one manhole to the next. The reel containing the cable is placed over one manhole, and a capstan or windlass with the necessary pulleys and braces at the next manhole. Electric motors, gasoline engines or horses may be used for drawing the cables through. Each section of cable is tested and then connected to the one previously laid in the adjacent section.

The National Association of Manufacturers of Sand, Lime Products will hold their fourth annual meeting in the German Room at the Chittenden Hotel, Columbus, Ohio, December 4, 5 and 6th. Further particulars regarding the meeting can be had by addressing the secretary Harry de Joannis, 45 Plymouth Place, Chicago.

CRAZING OF GLAZED CERAMIC PRODUCTS

By. Karl Langenbeck, Ceramist.

From *Architecture*, October, 1907.

The phenomenon of the cracking of the glaze on pottery products is one which occasionally comes under the eye of the architect.

In the case of various toilet appliances, the phenomenon is urged as directly objectionable because through these cracks in the glass covering the surface liquids might enter the body of the ware, which is never absolutely impervious to absorption. The penetration of liquids through the cracks or crazing of the glaze is, however, far less common than is supposed, in those larger appliances which the architect specifies, and with which alone he has to deal. It is comparatively seldom therefore that discoloration to any noticeable degree takes place in the body of such wares, because these cracks are so extremely close that capillary attraction of the liquid is only possible if in some way the piece becomes quite warm while the liquid stands over the crazing.

In pottery dishes of domestic use, the conditions are quite different, because these are frequently plunged entirely into hot water for the purpose of washing, which does open these cracks to a minute degree so that the dirty water enters by capillarity, and in the course of time stains the body with dark markings.

It may further be stated as a matter of moment to architects in reference to the possible absorption of organic liquids through such crazings, that this is never attended with the production of a disagreeable odor by the ware. Any odor which such vessels give in the course of use is entirely superficial, and can absolutely be removed by perfect cleansing and application of antiseptics. The reason why ware purposely strongly impregnated with organic liquids through crazing of the glaze, does not smell, is because odor is solely the accompaniment of fermentative decomposition, and the separation of the glaze surfaces in these cracks is so minute that not even the smallest micro-organisms can pass through them in the capillary suction of the entering liquid, but the cracks act as filters leaving the germs on the surface, while the liquid passing through is absolutely germ free.

As architects are subjected to a good deal of argument in the interest of trade about this subject, and as the quantity of counsel given has darkened judgment, it seems desirable to state the unbiased facts. Of course, a crazed glazed product lacks technical perfection and may as such occasionally offend the eye. But the writer only knows of one use in which any offense of this kind is at all marked, and that is where such glazed products are strongly bespattered with dark colored lubricating oils, as for instance in a white tiled wainscoting immediately behind the crankshaft of an engine. Such oils are absorbed much more strongly by clay products than watery solutions, and crazed lines in the glaze become conspicuously noticeable owing to darkening the body beneath.

Concerning the origin of the phenomenon "crazing" there is this to be said, it is due to a difference in the expansion of glass and of clay ware, and as the glass or glaze is fused to the surface of the clay body and cannot get away by pushing off or lifting, it parts or cracks. It is possible to correct the greater expansibility of the glass, by making it more infusible through the addition of clay and sand, by which means its expansibility can so far be reduced that the contrary phenomenon of "crazing" namely, the pushing off the glass from elevated or rounded parts of the ware takes place, a phenomenon which is called "shivering."

This defect is never seen in the trade because it takes place immediately upon drawing the ware from the kiln, and such ware never enters the market.

Because there is a correction for crazing due to the difference in the expansion and contraction of the glaze and the

body, this defect is now not a common one where pieces are entirely covered with the glaze. Only where this is not possible on account of some other demand which is made on the piece, can such a correction not be applied to the applied to the extent of making it completely and continuously perfect. This is the case in glazed tiling.

The unglazed baked tile has affinity for Portland cement, and enters into chemical combination with it. On this account it is necessary in the case of glazed tiling to leave the surfaces which come in contact with the cement in setting, uncovered by glaze to effect the most perfect bond. The latter can be as perfectly corrected to correspond with the coefficient of expansion of the body as in the most perfect piece of glazed pottery or porcelain of any other type. But this expansion of the clay body is altered from its natural conditions by the entrance of moisture, and particularly through the entrance of crystallisable salts, through capillary pressure. Now every Portland cement contains more or less of these water soluble salts which are absorbed in setting the tile. In spite of the careful adjustment of the glaze to the body, they cause it to craze. In this case the action is not subjected to any regular laws, but depends upon the fortuitous way in which the salts have been lodged, and therefore there is no possibility of providing against its taking place absolutely, and it is for this reason that no honest manufacturer of a partly glazed ware, in which the unglazed parts come in contact with Portland cement can give a truthful guarantee against this technical defect.

There is only one condition under which it may not occur, and that is in the case of wares which have been burned at an extremely high heat with glazes that are very difficult to fuse. The general objection to the adoption of such ware is the fact that for tiles, which as flat wall coverings are required to be of reasonable uniformity in tint and accuracy in shape, the variation of the individual pieces is so great that the uniformity in shade and size which is commonly required by architects, is not commercially attainable, particularly as the result of absolute freedom from crazing is not completely certain.

Colored glazes cannot be obtained under these conditions at all because the tints are destroyed by the high temperature. There is an impression among architects that when there is a cracking or crazing of the glaze, there is danger that in the course of time the glaze may come off the surface. For this fear there is absolutely no foundation. There are innumerable examples of crazed glazes on pieces contained in museums and set in cement in their original position as much as 2,000 years old; and never in one single instance has the glaze come off of the piece to which it is fused. Such a phenomenon is only possible in the over corrected glaze shivering, as explained above, and such a glaze cannot from its very nature craze. For this reason, an absolute guarantee of such a danger is assured and attested by every historic instance.

**FIRE PROTECTION FOR NEW YORK CITY
STREET RY. CAR BARNs**

The O. J. Childs Co., of Utica, N. Y., are making shipment of the second carload of their extinguishers, which completes an order for 575 "Childs" extinguishers for the Metropolitan Street Railway Co., of New York City.

They also report they are now making up 200 "Childs" extinguishers on a contract for the Department of Public Charities, New York City.

They have also recently furnished for the Panama Canal Commission 500 of their "Childs" extinguishers.

The above orders speak highly of the quality of extinguishers they manufacture.

THE COMBINED SAND AND CLAY MIXING MACHINE

In the first issue in August of the Clay Record we described for our readers a new Automatic Side Cut Brick Cutter that had just then been brought out and thoroughly tested for the clay workers of this country by the well known Chambers Bros. Company, 52nd below Lancaster Ave., Philadelphia, Pa.

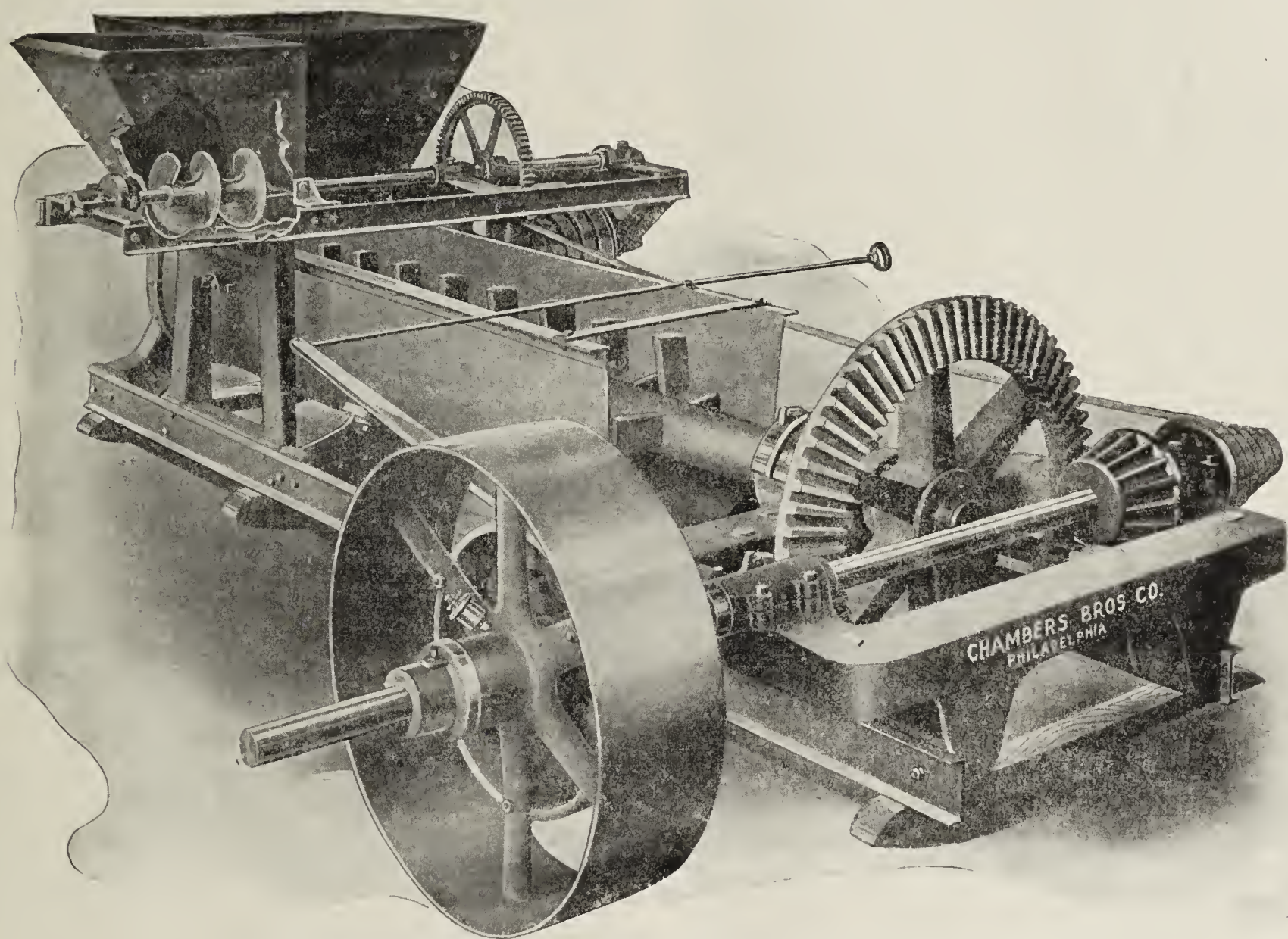
This Automatic Cutter has proved to be just what was intended and expected of it by its manufacturers and is now meeting with great success as is generally the case with the Chambers Brick machinery.

The latest improvement in machinery is the new Chambers combined sand and clay mixing machine, which we here illustrate for the first time to our readers. This machine accomplishes a much desired object in clay preparation.

The whole machine is very substantially built, the main gear frame being one solid casting and mounted upon a frame work of steel channels. Driving shaft is 2-15/16 inches in diameter, with friction clutch pulley 40 inches diameter by 12-1/2 inches face. Unboxed weight about 9200 pounds.

The machine may be used not only for sand but to feed exact proportions of coal dust, ground calcined clay, coke, or any finely divided dry material which it is desired to mix with some plastic mass.

If you are having trouble with your mixing apparatus or are considering the putting in of a new one in some future day, it may be well for you to get further particulars regarding the above described machine. Chambers Bros. Company, Philadelphia, Pa., are always glad to communicate with those interested.



CHAMBERS BROS. CO. COMBINED SAND AND CLAY MIXING MACHINE

In this machine there are 2 feed hoppers, the larger one for clay opening directly into the main cylinder or tub of the Pug Mill. The sand hopper adjoining, has a semi-circular steel bottom in which is placed an iron conveyor arranged to discharge from its end at a point well within the side of Pug Mill tub. The hopper may be filled with sand and so long as there is sufficient quantity to cover the conveyer there will be an exact amount fed into the pug mill where it falls directly upon the clay.

The mixture of sand with clay thus commences immediately at the entrance end of the pug mill tub. The sand conveyer is driven through the medium of a spur gear and pinion. Upon the pinion shaft is secured a five step cone pulley, so that by shifting its belt from one step to another a wide range in the proportion of sand to clay is easily obtained. In addition to this the knives in the pug shaft of the mill are adjustable as to pitch.

LACK OF CARS PREVENT ORDERS BEING FILLED IN SOME SECTIONS OF THE STATE

A letter received by W. S. Blatchley, Indiana state geologist, states that the clay workers in some sections of the state are rushed with orders and are unable to keep up with them because of a shortage in cars. D. N. Lanyon of Hillsdale writes the geologist that the car shortage is the only drawback in his locality. Hillsdale is admirably suited to the clay working industry, according to Mr. Blatchley, because of the adaptability of the soil in the surrounding country.

"If we could get more cars," writes Mr. Lanyon, "other clay industries would locate here. I had everything arranged with two large clay product concerns to locate here but the poor car service on the railway scared them out."

SOME SUGGESTIONS MADE TO WORKERS IN BRICK

The majority of engineers and some builders frequently leave the question of bond in brickwork to the unhampered choice of the working mason. Such casual proceeding, says Indian Engineering, is seldom attended with any serious risk in case of walls whose thickness is the length of a single brick, for here the bricklayer will be pretty certain to adopt either the Flemish or the English bond, both of which are unobjectionable in the majority of cases, though the latter is distinctly the sounder arrangement. When, however, as is the case in the majority of works which engage an engineer's attention, the thickness much exceeds that of a single brick, consequences of such neglect in detail are frequently deplorable. We have seen large masses of brickwork—notably in lock walls—consisting of nothing but headers, if we except those stretchers which appear on the exposed face of the wall and which, of course, occupy but a minute fraction of the wall's cross section. Such a structure, if we ignore the adhesion of the mortar, has but little more longitudinal strength than has a huge fagot of short sticks without that string which is usually provided by the woodcutter.

It is scarcely surprising, therefore, that the majority of such walls develop transverse cracks, even when they are exposed to nothing more in the way of bending moment than is incidental to ordinary careless construction.

The main desiderata of a good bond are three—(1) The bricks should overlap in each direction an aggregate extent which is approximately proportional to the bending moment or shearing stress to which the wall may be exposed in that plane; (2) the bond should not necessitate the cutting of bricks; (3) it should be applicable to walls of all thicknesses and yet sufficiently simple to be easily learned by the ordinary bricklayer. The "Habri" bond pre-eminently satisfies all these requirements; the first two demonstrably, and, concerning the last, we have never met a master who did not readily comprehend the system as soon as it had been illustrated in his presence by the piling of a few dry bricks.

In the Habri bond every course in a wall of indefinite thickness is essentially identical with every other course, and consists of a cycle of three rows of bricks—two rows of stretchers followed by one row of headers. This arrangement in each course is, however, shifted half a brick in a direction at right angles to the rows, as compared with the course upon which it rests, the direction of the shift remaining constant throughout the wall's height. When, under the above clause of this rule, a row of headers would be divided by the plane of a face of the wall, a row of half bricks is not inserted, but a row of stretchers substituted.

In the case of a wall half a brick thick this bond necessarily reduces—as do all other bonds—to a wall consisting of stretchers only. When the wall is one brick thick we have one course of headers only, followed by three courses of stretchers only; the arrangement being here identical with common English bond, which is undoubtedly the soundest arrangement in a one-brick wall under ordinary circumstances.

It is, however, in walls exceeding one brick in thickness that the value of our systematic rule becomes evident. Start-

ing from the face an arch abutment of indefinite thickness would have in its first course one row of headers, followed by two rows of stretchers, and so on. The second course would show one row of stretchers, followed by one row of headers, and then two rows of stretchers, the last three rows being repeated indefinitely. The third course would consist of two rows of stretchers, followed by one row of headers, and so on. The fourth course would have three rows of stretchers next the face, followed by the usual cycle of one row of headers and two rows of stretchers. This completes the cycle of courses, the fifth course being identical with the first not only in arrangement, but also in horizontal position. In the case of a wall under a vertical load, the direction in which the half-brick step by which each course has its arrangement shifted as compared with that of its predecessor is made has no importance, though of course it should remain unaltered throughout the wall. When, however, the wall is exposed to an inclined thrust it is preferable to make the shifts as you ascend in the same direction as the thrust. Thus in an arch abutment the shifts are made from the face; in a revetment wall toward it.

The name Habri is that of a distributary channel upon which the bond was first employed some twenty years ago.

NEARLY READY TO START NEW AKRON PLANT

Within the next week operations will begin in the manufacture of sewer pipe in the mammoth new plant of the Robinson Clay Products Co., in East Akron, Ohio. The finishing touches to the building and kilns are now being made and the machinery used in the manufacture of the company's products is being placed in position.

This new plant is said to be the largest of its kind in the world, with a capacity greater than that of the American Sewer Pipe Co., at Barberton. It is located on the Metzger farm along the Valley railroad, and the work of its construction was begun nearly two years ago.

The dimensions of the main building are 402 x 100 feet, and four stories in height. It has been constructed at a cost of over \$25,000. It will be equipped with the most modern machinery made in the manufacture of sewer pipe. All of the machinery is being installed by an Ohio firm. In addition to this there has been installed a 450-horse-power Corliss engine.

All of the machinery will be operated by electric power, and there will not be a belt or shaft, except in the engine room, where the power is generated, in the entire plant.

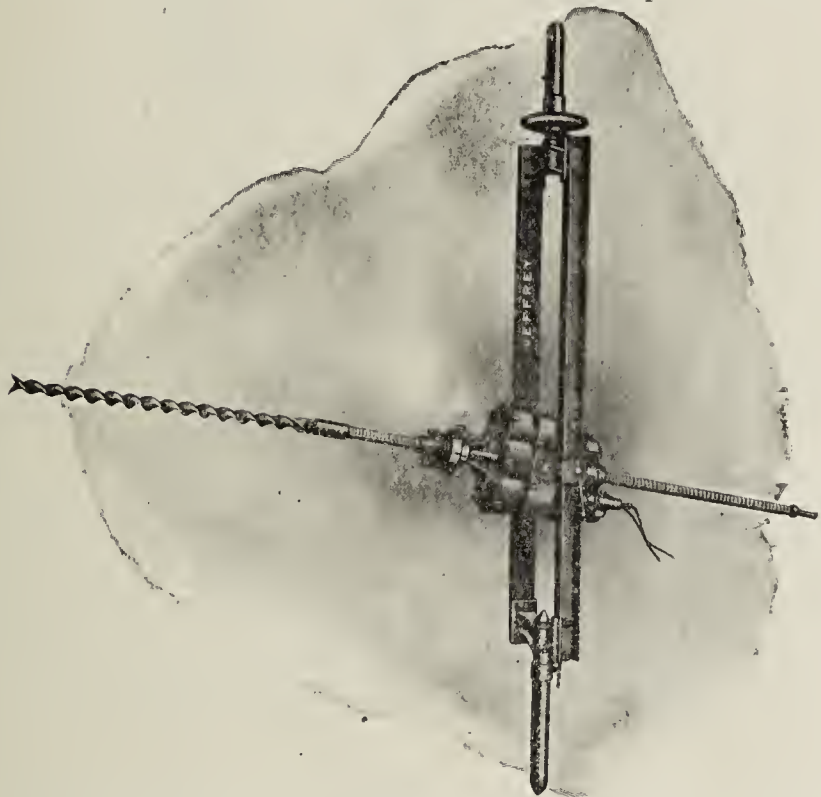
Hunt & Wigly, local contractors, had charge of the brick work in the walls, the 18 kilns, and two large smoke-stacks. The Burgner Iron Co., did its own plumbing, its master mechanic, Geo. Mitchell, having charge of this. All of the electrical apparatus, motors, etc., has been supplied by the Westinghouse Co., of Pittsburg.

There are 18 large kilns built to burn the sewerpipe. All are of the down draft pattern. In addition to this there will be a machine shop, blacksmith shop, and repair shop. The clay to be used in this plant is to be secured from two large beds or deposits on the Metzger and Sumner farms, which the company has acquired, covering an area of about 60 acres. All grades of pipe, from four to 36 inches, will be turned out. The company will employ nearly 500 men when it runs full capacity.

THE JEFFREY ELECTRIC DRIVEN AUGER DRILL

The Jeffrey Manufacturing Company of Columbus, Ohio, have for a long time been building electric driven auger drills for use in coal mines, and have recently brought out a heavier type, as shown in the accompanying illustration, and known as the A-5 drill. This drill is to be used for drilling gypsum, fire clay, rock salt, and other material of about the same hardness.

The motor is of ample capacity to take care of the most severe service that the drill point will stand, and has a nominal rated capacity of 3 H. P. with a momentary overload capacity of from 6 to 8 H. P. The gearing may be arranged for auger speeds from 100 to 300 R. P. M. and the thread bar provided with square threads from 6 to 12 per inch.



The building of drills is only a small portion of the machines that are made and sold by the Jeffrey Company. They issue complete catalogues, on elevating and conveying machinery. Coal handling, coal mining, coal washing, coal and coke drilling. All kinds of conveyers, chains, crushing and pulverizing machinery, electric locomotives for mine and industrial haulage, are of electric locomotives, saw mill and lumber machinery, water elevators, power house equipments and drying machinery.

If you are interested in purchasing machinery in any of these branches write to them for their catalogue. They will honor your request by return mail.

UNITED STATES GYPSUM CO. PAYS SHARE- HOLDERS IN STOCK OF LITTLE RAILWAY

An odd dividend announcement has been made by the United States Gypsum Co., which has declared a dividend of $2\frac{1}{2}$ per cent payable in the stock of the Erie & Michigan Railway Co., a block of which is owned by the Gypsum company.

The Erie & Michigan Railway & Navigation Co., as its full title runs, operates 11 miles of railway as well as a fleet of steamers on the great lakes. It has an authorized capital of \$250,000. The United States Gypsum Co. has outstanding \$3,651,000 preferred stock and \$2,247,000 common. It was formed by the consolidation in 1901 of 35 producers of gypsum.

SAND-LIME BRICK INDUSTRY IN 1906

The total value of the sand-lime brick produced in the United States in 1906 was \$1,170,005, an increase of 20 per cent over the value (\$972,064) in 1905. The value of the common brick made by this process in 1906 averaged \$6.71 per thousand, as against \$6.85 per thousand in 1905, while the front brick averaged \$10.42 per thousand in 1906 and \$11.02 in 1905. Almost 90 per cent of the product is marketed as common brick, a result that could hardly have been foreseen when the brick was first introduced into this country. The total number of plants has increased from 16 in 1903 to 57 in 1904, to 84 in 1905, and to 87 in 1906, and brick of this character are now made in nearly every State in the Union. New York is the largest producer, the value of the product in 1906 amounting to \$191,000; and Michigan, with a product valued at \$174,921, is a close second. California, Florida, Indiana, New Jersey, and Pennsylvania each produced in 1906 sand-lime brick to a total value of more than \$50,000.

The constitution of the binding material of sand-lime brick has been a mooted question. Some of the advocates of the new product have not only claimed that a definite lime silicate was formed during the process of manufacture, but they have also claimed, by implication at least, that the silicate was formed during the process of manufacture, but they have also claimed, by implication at least, that the silicate was formed during the process of manufacture, but they have also claimed, by implication at least, that the silicate was formed during the process of manufacture. An investigation made during the past year by Frederick E. Wright in the geophysical laboratory of the Carnegie Institution of Washington affords conclusive evidence of the subject. At the request of E. C. Eckel, Mr. Wright, who is one of the very few investigators intimately acquainted with the lime-silicate series, examined with the microscope several specimens of commercial sand-lime brick. Mr. Wright states that the binding material in the specimens submitted to him is a hydrous lime silicate, formed by simple and well known reactions from lime and sand in the presence of steam. The reactions are, however, in no way comparable to those that take place during the process of Portland cement manufacture, and the binding material is very different in composition and relationship from Portland cement clinker.

As a result of this investigation Mr. Eckel, who has prepared for the United States Geological Survey the statistics of sand-lime brick manufacture in 1906, makes the following statement:

cate was the same as that which exists in Portland cement.

"It may safely be assumed, then, that a sand-lime brick as marketed consists of (1) sand grains held together by a network of (2) hydrous lime silicate, with probably, if a magnesian limestone were used, some allied magnesian silicate, and (3) lime hydrate or a mixture of lime and magnesia hydrates. These three elements will always be present, and the structural value of the brick will depend in large part on the relative percentages in which the sand, the silicates, and the hydrates occur."

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the production of lime and sand-lime brick in 1906, is now ready for distribution by the Geological Survey.

THE ISENHOUR ELECTRIC BRICK

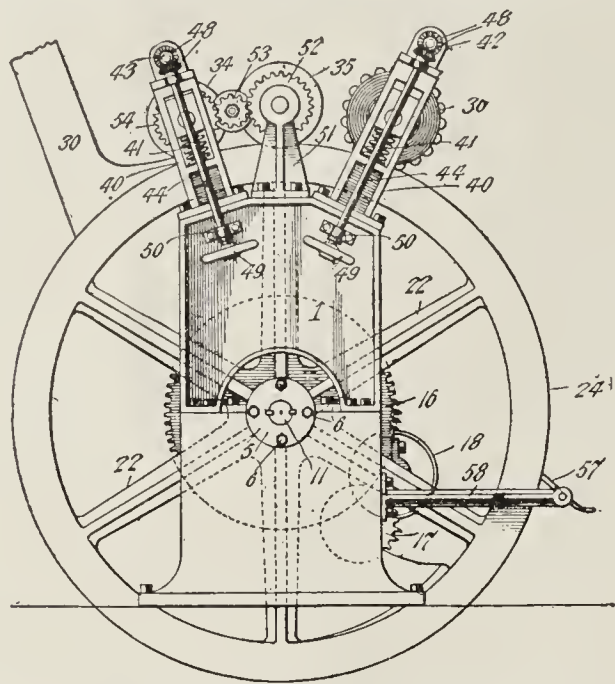
G. W. Isenhour, a brick manufacturer of Spencer, N. C., has perfected a new virified brick, which is made by a process known only to himself. The product is said to be of a very superior quality, being extremely hard and durable. The brick will be known as the Isenhour Electric Brick, and will be manufactured in large quantities when the power of the Whitney Company is available at the narrows on the Yadkin River.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

864,104. Molding-Machine. Patrick L. O'Toole, Edwardsville, Ill. Filed Aug. 15, 1906. Serial No. 330,745.

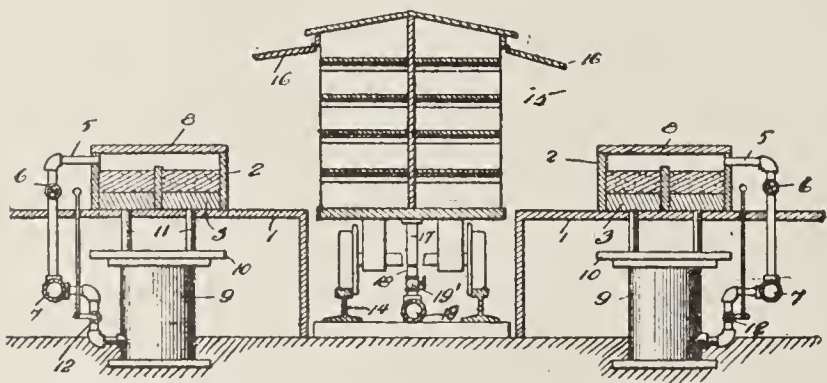
In a molding apparatus, the combination of a rotary mold drum provided with peripheral mold boxes, a hopper



for supplying the plastic material thereto, said hopper being arranged at one point in the path of revolution of the drum, a series of compression rolls arranged in regular order in close relation to the hopper to gradually and increasingly compress the material into the mold boxes, one of said rolls being driven by engagement with the drum, and means for positively driving the other rolls independently of the drum.

865,266. Apparatus for Forming Building-Blocks and Artificial Stone from Plastic Material. Albert A. Pauly, Youngstown, Ohio. Filed April 30, 1907. Serial No. 371,141.

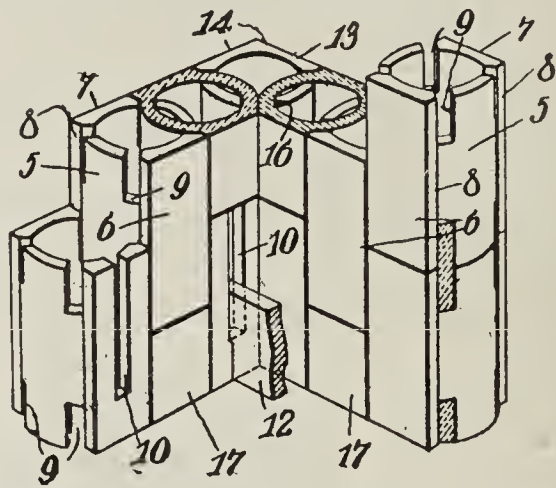
An apparatus of the type described consisting of supports, molding frames arranged upon said supports, doors normally closing said frames, ejectors located beneath said supports and extending into said frames, steam pipes connecting with said ejectors and with said frames, and means for controlling the operation of said ejectors.



Concrete block forming means, comprising a supporting platform, a plurality of molding-frames supported on said platform, a steam supply line beneath the platform, steam pipes connecting said steam supply line with each of said molding-frames, block-ejecting means for each molding frame comprising a cylinder located beneath the platform having a movable head, plungers carried by said head and projecting through the platform into the molding frame, a piston in said cylinder for engaging said movable head, connections between the cylinder and said steam-supply line, and means operated from the platform for controlling passage of steam from the steam supply line to said cylinder.

864,801. Wall and Block for Making the Same. Orlando Richards, Bristol, Wis. Filed Aug. 3, 1906. Serial No. 329,109.

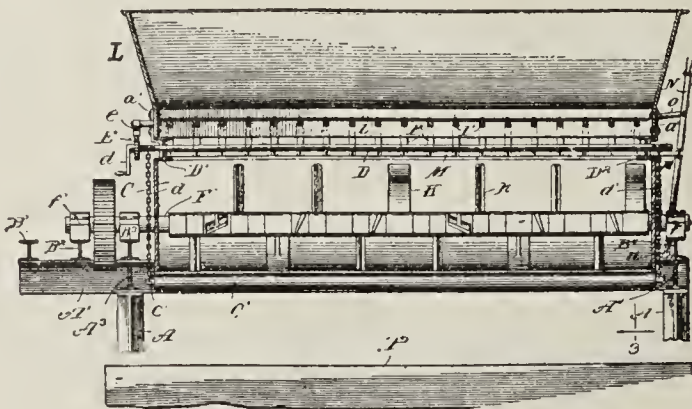
A corner block comprising a body portion having angularly disposed faces connected by a convex wall and provided with a vertical stop shoulders disposed at the juncture of said faces and convex wall, there being locking recesses formed in the convex wall at the opposite ends thereof.



A wall formed of a plurality of substantially cylindrical side blocks having oppositely disposed parallel side walls connected by convex end walls and provided with vertical stop shoulders disposed at the juncture of the side and end walls, there being locking recesses formed in the opposite ends of the convex end walls and interfitting with the walls of the recesses in an adjacent side block, and corner blocks each having angularly disposed faces connected by a convex wall, the convex walls of the corner blocks being provided with oppositely disposed recesses adapted to receive the convex walls of the adjacent side blocks, there being vertical stop shoulders formed on the corner blocks at the juncture of the convex walls and angular faces for engagement with the stop shoulders of the adjacent side blocks.

865,365. Mixing Apparatus. Chester T. Drake, Chicago, Ill. Filed Nov. 13, 1903. Serial No. 180,997.

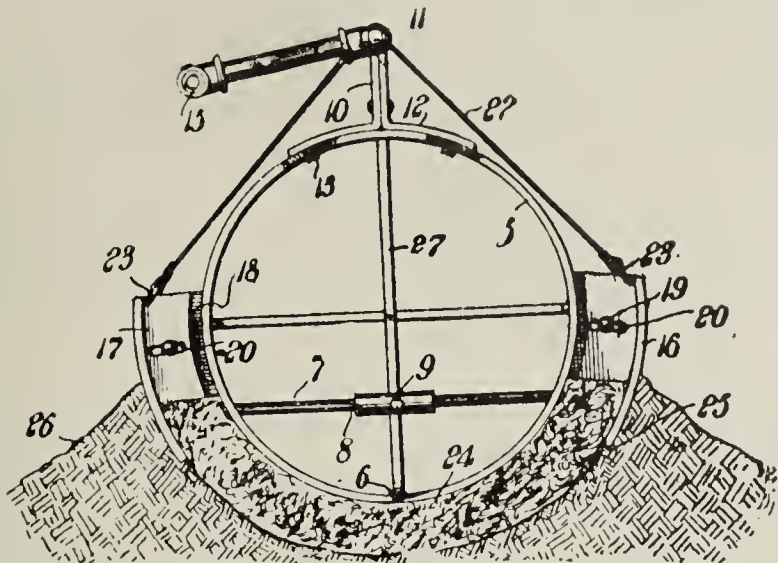
In an apparatus of the character described, the combination with a supporting framework comprising parallel side sills and transverse end sills, a mixing chamber located between and supported by said side sills, parallel rotary shafts extending through said mixing chamber, bearings for said shafts mounted upon said transverse sills, radial blades fixed to said rotary shafts, vertical brackets supported upon said parallel side sills between which the mix-



ing chamber is supported, transverse beams supported by said brackets above and at each end of said mixing chamber, a longitudinal shaft extending through and journaled in said transverse beams, downwardly swinging doors closing the bottom of said mixing chamber, flexible connections connecting said doors with the ends of said shaft, means for rotating said shaft to lift said doors against the mixing chamber to close the same, a measuring box supported by said vertical brackets above said mixing chamber, a dumping bottom for closing said measuring box, a lever for opening and closing said dumping bottom pivoted at its lower end to one of said transverse sills.

865,968. Mold for Making Culverts, Conduits, and Similar Hollow Structures. Joseph Hickson, Mount Gilead, Ohio, assignor of two-fifths to Thad E. Buck, Mount Gilead, Ohio. Filed Apr. 30, 1907. Serial No. 371,103.

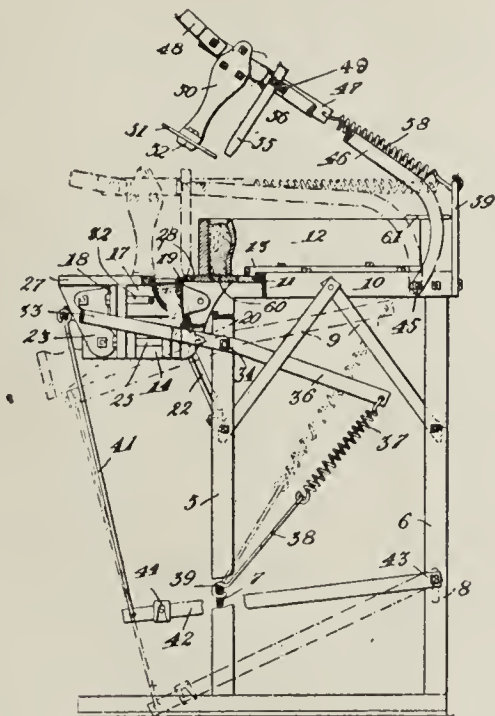
A mold including an expansible shell having its adjacent longitudinal edges over-lapped, means disposed within the shell for expanding and contracting the walls thereof. formers disposed on opposite sides of the shell and spaced



from the latter to form intermediate moulding compartments, adjustable spacing plates carried by the formers and bearing against the exterior walls of the expansible shell, a shaft journaled on the shell, and a flexible connection between the shaft and the longitudinal plates for raising and lowering the latter.

866,325. Brick Making Mechanism. Sidney M. Black, Bay City, Mich. Filed May 5, 1906. Serial No. 315,330.

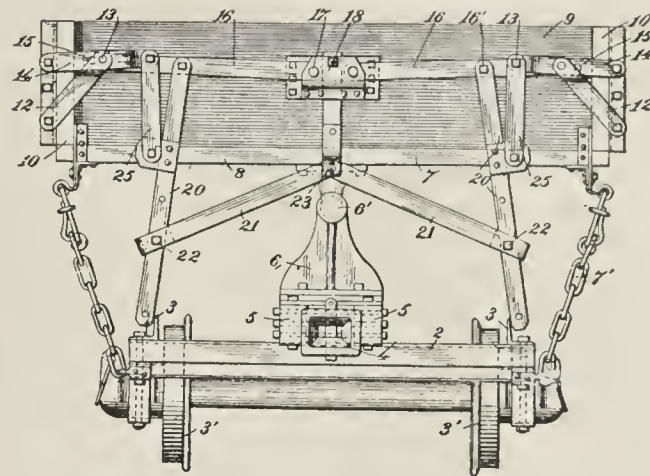
In a brick making machine, a frame, a plurality of laterally movable mold-sections, a yoke pivotally mounted on the frame for moving the mold-sections to operative and inoperative positions, and a spring connected with one end of said yoke for normally and yieldably holding the yoke in operative position.



In a brick making machine, a frame, a plurality of mold-sections pivotally mounted for lateral movement on the frame, a hopper slidably mounted on the frame and movable to operative position above the mold, a pivoted yoke for moving the mold-sections to operative and inoperative positions, a foot operating lever, a pivotal connection between one end of the yoke and foot-operating lever, a spring connecting the frame and the opposite ends of said yoke for normally and yieldably holding the yoke in engagement with the mold sections, and a tamping element pivotally mounted for swinging movement on the frame and adapted to enter the mold.

866,152. Dumping Car. Charles B. Peteler, Minneapolis, Minn., assignor to Kilgore-Peteler Company, Minneapolis, Minn., a Corporation of Minnesota. Filed Mar. 4, 1907. Serial No. 360,520.

In a dumping car, a truck, a car body adapted to be tilted thereon to discharge its load, and a side board for said car body, in combination with swinging supports for said side board, props pivoted at one end to respective swinging supports, and toggle levers, connecting said side board with

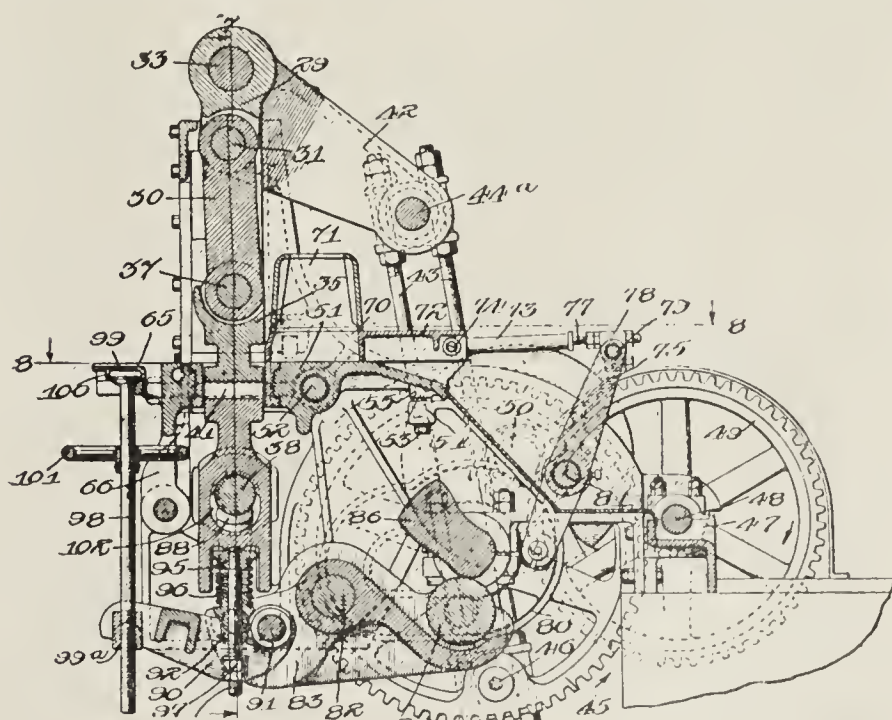


said props; the whole so arranged as to increase the angle between said swinging supports and said props, when the car is tilted, thereby straightening said toggle levers to turn said side board, substantially as described.

868,515. Brick-Machine. Bruce C. White, Chicago, Ill. Filed Feb. 23, 1906. Serial No. 302,614.

In a press, the combination of two opposed plungers, a toggle connected with said plungers, the connection between one member of the toggle and one of the plungers consisting of vertically-sliding side-bars, a lever attached to the middle joint of said toggle, a fulcrum for said lever mounted in fixed bearings in said sliding connection, and means for flexing said toggle by moving said lever, substantially as described.

In a press, the combination of an upper and lower plunger, a toggle, with the two members of which said plungers are respectively connected, a machine-frame comprising two side



portions, two gear wheels located in recesses in said sides of the frame, a shaft on which said gear wheels are mounted, a lifting lever adapted at its forward end to exert an upward pressure on said lower plunger, a cam on the central portion of said shaft adapted to bear on the rear end of said lifting lever, cranks on said gear wheels, connecting rods attached to said cranks, a bell crank lever connected to the said rods, said bell crank lever being connected to the joint of said toggles, and a movable fulcrum for said bell crank lever, substantially as described.

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OCTOBER 30, 1907.

No. 8

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick
and Tile Association will be held at Des Moines, Iowa,
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products
Manufacturers will be held at Ottawa, Canada, November
19, 20 and 21, 1907.

The fourth annual convention of the National Association
of Manufacturers of Sand-Lime Products will be held at
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-
ciety will be held at Columbus, Ohio, February 3d and
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving
Brick Manufacturers' Association will be held at Columbus,
Ohio, February 3d and 4th 1908. Headquarters at the
Southern Hotel.

The twenty-second annual convention of the National Brick
Manufacturers' Association will be held at Columbus, Ohio,
February 3d to 8th 1908. Headquarters at the Southern
Hotel.

The thirtieth annual convention of the Illinois Clay
Workers' Association will be held at Peoria, Ills., Jan. 14-15
and 16th 1908. Headquarters at the National Hotel.

Laziness is a habit that grows fast and clings close.

It is easier to learn some things than it is to unlearn
them.

"Tradition and custom are two of the strongest forces
that sway men."

Beware of the man whose debts don't worry him. He
would steal your umbrella if he saw it in the vestibule of a
church.

Get up the "copy" for the advertisement that you were
thinking of sending in the Clay Record and mail it to us to-
day. Tomorrow will never be here.

"The carefulness with which a successful angler selects
his flies before he throws his line for trout is instructive.
Nothing that is unnatural, or that differs from things as they
are, does he tolerate. Just as much care should be given to
the lines you throw forth in an advertisement."

Subscribe for the Clay Record today. Its cost will not
break you.—Its only one dollar.—Twenty-four numbers for
so small amount—If you don't get value received during
the year we will cheerfully refund the money. Remember
it is the only Clay Journal in America that is printed twice
a month. Just be good to yourself and subscribe.

CLAY SKY SCRAPERS ARE GREAT
FIRE WALLS

Across the lower end of New York city the greatest fire
wall in history is nearing completion. It will effectually
cut off the financial district of the metropolis from the rest
of the city in case of a conflagration.

Almost two blocks thick and hundreds of feet in height,
this great unburnable barrier, roughly following the line of
Liberty street, is formed by a chain of skyscrapers com-
posed mostly of steel and hollow block of Jersey clay which
have each been heated to a temperature of 2,000 degrees in
the process of manufacture, and in their finished state as
porous terra cotta are absolutely not burnable.

Beginning at the North river, the Central building, of 12
stories, and the West street building of 23 stories, form
the west end of the wall. Between Washington and Green-
wich streets is a break, but it is more than counterbalanced
by the Hudson Terminal building, between Greenwich and
Church streets, and the Singer building, the highest in the
world; the City Investing and the Trinity buildings between
Church street and Broadway.

Crossing Broadway the fireproof wall is continued by the
Broadway Maiden lane building, the Jewellers' building
and the Provident Savings Life building. East of Nassau
street are the Mutual Life Insurance building, the Contin-
ental building, Royal Insurance building, Bishop building,
International building and the Tontine-Tabor building, form-
ing an almost unbroken line to Water street of structures as
nearly fireproof as human art can build.

OBITUARY

Henry Schrage, manufacturer of brick at Kansas City, Mo., died at his home, 500 Jackson Ave. He was 60 years of age and lived in Kansas City thirty years. The works are on 2d St., near Holmes St.

David A. Layton, a most prominent brick manufacturer of Marion, S. C., the owner of brick plants at Florence, Layton, Mullins, and Pedee died at his home of Typhoid Fever. He was 46 years of age and leaves a wife and six children.

William C. Brush, a pioneer of Buffalo, N. Y., died at the family home, 171 Woodward Ave. He was 88 years of age. He was the organizer of the brick works known as Brush Brothers, which was started in 1842, and with his three sons was actively engaged in same at the plant on Bailey Ave.

James Fox, vice-president of the Collingwood Brick Company and a resident of Toledo, Ohio for forty years, died at the Toledo Hospital from a fall that he sustained about a month ago. He was sixty years of age. His sons James E. and George H. were connected with him in the business.

ACCIDENTS, DAMAGES AND LOSSES

Will Nisbett, an employe of the Barton Lumber & Brick Co., Jonesboro, Ark., had the misfortune to lose four of his fingers by getting them caught in a saw.

Paul Buchle, an employe of the Hecla Portland Cement Works at Bay City Mich., was killed by a cable breaking and letting tons of gypsum fall upon him.

An involuntary petition in bankruptcy has been filed against the Boyds Hill Brick Co., Pittsburg, Pa., among the claims filed was one of Booth & Flynn Ltd., for \$9,000.

At the plant of the Bradford (Pa.) Pressed Brick Co., Joe Constantzo's right arm was drawn into a large cog wheel and injured so it had to be amputated above the elbow.

Joseph Kochnowski, a Springville laborer commenced action against the Springville Brick Co., Detroit, Mich., for \$10,000 damages for being seriously injured by a brick kiln falling on him.

Nick Birills, an employe of the Indiana Run plant of the Suburban Brick Co., Bellaire, O., was severely injured by the falling of clay onto him. The scalp was laid open to the skull and sewed up by the doctor.

The Piedmont Brick & Coal Co., Piedmont, W. Va., is in the hands of a receiver. This was done so the plant can be sold and a clear title given. The court has ordered the receivers to borrow \$2,000 to rehabilitate the plant and start it going.

The Universal Cement Brick & Block Co., manufacturers of cement brick and blocks at 200th St. and Webster Ave., The Bronx, New York, has made an assignment to Edward Michling. William E. Welch is president of the company and W. J. Leiberts secy. & treasurer.

Benjamin Watkins has filed suit against the Clay Center (Kansas) Pressed Brick Co., for \$5,000 damages, alleging the company to be responsible for his injury received while at work, resulting in the loss of his left foot, caused by climbing on the machinery to oil a portion of it.

FIRE! FIRE! FIRE!

The Bancroft (Ia.) Tile Works was burned to the ground last week. It was one of the largest industries in Kossuth county.

The Slidell (La.) Brick & Tile Works suffered a loss by fire of several thousand dollars by the frame work around the kilns burning off.

Fire destroyed a part of the plant of the Edward F. Day brick works at Danvers, Mass. The loss will amount to \$4,000 fully covered by insurance.

The two story office building of the Kittaming Brick & Fire Clay Co., at Wicksboro, Pa., recently erected by the company at \$5,000 cost was completely destroyed by fire.

The loss by fire at the plant of the Spears Brick Co., on buildings, carts and machinery at Madison Av. and 136 Street, New York did damage to the extent of \$9,000, fully insured.

RAILROAD WANTS RATE ON BRICK INCREASED

Atlanta, Ga.—A petition filed by the Western and Atlantic railway asking that the rate on brick from certain points on its line to Atlanta be increased from 2 to 3 cents per hundred pounds was the subject for discussion before the railroad commission yesterday, and the hearing was postponed indefinitely. The railroad contends that the 2-cent rate is too low and that the 3-cent rate once approved by the commission should be made effective. A number of brick manufacturers attended the hearing and entered a protest against increasing the rate, asserting that it would put them out of business in competing with Atlanta manufacturers.

SCARCITY OF BRICK IN COLUMBUS

Columbus, Ohio has been suffering from a brick famine all summer and even with the coming of fall and the usual slackening in building operations there is no relief yet in sight. Leading contractors say that it requires about 50,000,000 brick to supply the demand in Columbus in average years and the demand this year has been above the average.

The manager of a company which supplies about 8,000,000 brick yearly to the local trade, said that he had been behind with orders all season and had been compelled to get brick wherever he could to fill orders, in many instances shipping them in from a distance. There is no lack of brick-making clay around Columbus, but the majority of the builders say that the city has outgrown the facilities of the local brick manufacturing companies.

All of them have operated steadily the last year, but have been unable to supply the demand, which has been much heavier than last year. In September alone the amount of building in Columbus was 41 per cent in advance of that of the corresponding month of last year. As a result of the shortage in brick, building operations in Columbus have been retarded and many contracts put behind for weeks. No relief is to be seen for this season, but there is talk of several new brick plants being put in operation in this district next year.

Leading brick men say that the local supply of brick was fully 30 per cent short of the demand this season.

LARGEST KILN OF BRICK BURNED BY THE COMPANY

Almost 18,000,000 brick have been made in Grand Forks, N. Dak., during the present season. This is more than were ever made in the city in any season before, according to a statement made by A. I. Hunter, president of the Red River Valley Brick corporation, and represents the largest business handled by any brick concern in the history of the northwest.

"We are just about finishing up the year's work, and are very well satisfied with the year's business." "Our sales have been very satisfactory, in deed, but we are carrying over to next season the largest quantity of brick ever carried over winter.

"We are burning now in the old Bartholomew yards, in the south end of the city the largest kiln of brick ever burned there since the yard was started some twenty years ago. The kiln contains 1,100,000 brick, and requires the labor of 16 men day and night for six or seven days. It consumes about 65 cords or seven carloads of wood daily, costing at present prices \$360 a day.

This yard has made a good many brick since it was opened by Mr. Bartholomew, averaging about 3,000,000 brick annually, nearly all of which have gone into buildings in Grand Forks. The present kiln is the last that will be burned there, and the equipment is already being taken down and removed to the north end of the city, where it will be consolidated with that of the Poupore yard, now owned by the Red River Valley Brick corporation. I have sold the place and also my farming equipment.

"Although the cost of making brick, owing to advanced prices of wood, labor, etc., is at least \$1 per thousand more than it was a year ago, our prices are still the same as they have been for the past five years. Our business is steadily expanding and we have shipped brick this season as far as Winnipeg to the north, Superior on the east, Cut Bank, Montana, on the west and to Aberdeen, South Dakota, on the south.

"We are somewhat conservative about introducing new machinery since our experience a year ago with the new fangled down draft kiin, which proved a complete failure, at a cost of \$6,000 to us.

"However, we have sent away three carloads of our clay to ascertain what results they would give in making sample hollow brick and tile, and the results have been so satisfactory that we shall probably add a plant for the manufacture of these goods next season, although the demand is not very extensive in our territory.

A LARGE BRICK COMPANY FOR ONTARIO

Papers of incorporation have been sought by local capitalists for the Western Ontario Brickfields, Ltd., London, Ontario, capitalized at \$100,000.

The provisional directors will be Dr. John D. Wilson, S. Frank Glass, Dr. Drake, C. B. Edwards, Chas. H. Ivey, Dr. J. E. Niven and J. Lewis Thomas.

The analysis of the clay which is to be used in the manufacture of the brick is reported to be equal to any in the old country.

Mr. Thomas leaves for England in a week in connection with the business of the company.

SUB-BOARD OF APPRAISERS ALLOWS DISCOUNT ON LOW GRADE JAPANESE WARE

It was decided by sub-board No. 2 of the general appraisers at New York that American purchasers of cheap blue and white chinaware from Japan are entitled to discounts of 10 or 20 per cent upon merchandise entered into this country and found to be seconds or thirds respectively.

The test case, which was decided yesterday in favor of A. A. Vantine & Co., of this city, is of general interest to all importers of similar goods from the mikado's empire, and for this reason, the litigation which has lasted nearly a year has attracted general attention in the trade. The merchandise in question is known as "debands," and was bought at Nagoya. At the hearings of the issue before Eugene G. Hay, acting as a single reappraising officer, and later before General Appraisers Fischer and Howell, sitting as sub-board No. 2, it was shown that Vantine & Co., ordered upon a sample at an agreed price by piece or dozen. Porcelain firing in Japan is largely an empirical industry, not having been brought to the scientific perfection of the French, German and English potteries.

Because of this condition, the purchaser of Japanese porcelains must always anticipate the presence of a substantial number of defective pieces in his orders when delivered. The goods are therefore always bought subject to inspection. Some merchants agree to pay a fixed price for every merchantable piece, rejecting absolutely all pieces that are deemed not fairly merchantable. With other buyers the practice is to separate the orders when delivered into firsts, seconds and thirds. Such has been the practice of Vantine & Co. The seconds and thirds after an inspection by the manufacturers are purchased at discounts of 10 or 20 per cent from the agreed price, which relates only to firsts.

Thus if Vantine & Co. import a cup and saucer at 2 yen a dozen, the price for seconds and thirds of that cup and saucer will be respectively 1.80 yen and 1.60 yen a dozen.

The local appraiser at New York questioned the correctness of this practice and for a year past advanced the values of seconds and thirds indiscriminately to the prices of firsts. Upon appeal to the board of appraisers last winter, the tribunal sustained the entered values of the importations then pending before it with one exception. The board declined to sustain the importers as to the cheap blue and white porcelains and held that the appraiser was correct in his contention.

Kammerlohr & Duffy, attorneys for Vantine & Co., advised the importers not to accept the board's decision as final, with the result that a new case was framed. In the new case, testimony of a convincing character was laid before General Appraiser Hay, who sustained the importers. The government then appealed to sub-board No. 2. John G. Duffy, of the law firm representing the importers said that no new testimony was laid before the sub-board, arguments being made upon the testimony submitted to Mr. Hay.

A receiver has been appointed for the Montello Brick Works, Reading Pa. This company is a subsidiary of the United States Brick Co., and is an operating company holding plants under a lease.

ARRANGE FURTHER DETAILS OF COMBIN- ING INTERESTS AND PLAN TRIP OF INSPECTION

Stockholders of the pressed brick plants in York, Pa., and county which are to merge their interests held a meeting in the offices of C. C. Frick & Co., in the Security, Title & Trust company building. Tentative plans for the combination were discussed and a committee appointed to visit the plants of the various companies to secure such information as will be necessary in effecting the merger.

Those present at the meeting were J. W. Kilgore, A. W. Sechrist, J. T. Kopp, S. F. Glatfelter and E. R. Hively, of the Hollywood Brick company; Lewis Ahrens, E. G. Quickle and W. G. Robertson, of the Ahrens Brick company, and George Motter and F. O. Metz, of the Drury Brick company. A letter regretting his inability to be present and requesting full information of any action taken at the meeting was received from D. W. Cox, of the Manchester Shale & Pressed Brick company.

The Stauffer and Stoney Brook plants, which were not represented at the meeting, are expected to participate in the combine and have been asked to send representatives upon the inspection trip. The five plants combined would represent \$200,000 capital and have a capacity of about 50,000 brick per day.

Mr. Motter, of the Drury company, gave an instructive talk at the meeting upon the success of day and night supervision of each plant and the adoption of economical methods.

Those who have been named as a committee to make the inspection trip are J. W. Kilgore, of the Hollywood company; E. G. Quickle, of the Ahrens company, and George Motter, of the Drury company.

KENNEBEC, ON RESERVATION, ACQUIRING FAME BY REASON OF NEW FACTORY BEING ESTABLISHED

Industries are springing up out in the reservation towns west of the Missouri river in South Dakota, and a substance that was thought to be of little value even as farming land is being turned into a fine quality of brick. At Kennebec a new brick factory has been established and will be put into operation within a short time. The brick will be manufactured from the gumbo soil in its native state, with hardly any preparation. The tests that have been made from the gumbo have shown it to have the best possible qualities for producing a high class brick. The output of the company will at first be 60,000 brick per day, but it is the intention of the company to increase it to 200,000 in the spring. Building material is very scarce in that country and the new material will be a vast help to people on the reservation.

TERRA COTTA MANUFACTURERS GETTING MORE ADVERTISING

Manufacturers of terra cotta are getting an advertisement for the durability of their wares from an unexpected source. An archaeological survey in Burmah has resulted in the discovery of terra cotta reliefs dating back to the eleventh century, with the material as hard and the modeling and inscriptions almost as sharp cut and clear as if made yesterday. Those ancient workmen knew a few things.

BRICK COMPANY MAKES CHARGES IN AP- PLICATION FOR RECEIVER

The Drury Brick and Construction Company of York, Pennsylvania, instituted suit in Circuit Court, by Heuisler & Sauerwein, attorneys, for the appointment of a receiver to wind up the affairs of the Highland Contracting Company, the Baker-Millikin Supply Company and the Jesse F. Hampton Company, all three Baltimore, Md., corporations. George L. Mowen, of Baltimore, is also a defendant in the suit.

Mr. Mowen, the bill of complaints states, is one of the incorporators of the Highland Contracting Company, and is engaged in carrying on its business as well as the business of the other two companies, with offices in the Calvert Building. It is alleged that between April 23 last and July 17 the Drury company sold to the Baker-Millikin company several lots of brick, for which a balance of \$755.24 was due on July 17, which the company has been unable to collect.

It is alleged that Mr. Mowen and the three companies named "are engaged in a scheme to defraud their creditors by buying upon credit materials used in the building and construction business in the name of one of the companies and then turning them over to another of the companies for use in their various construction enterprises." The Baker-Millikin company, it is alleged, has no financial responsibility. Because the Drury company cannot have execution upon the other companies and because each of the companies has profited upon the credit of the others, the operation of the affairs of the companies is declared to be a fraud upon their creditors.

ALWAYS MAKING IMPROVEMENTS AND LOOKING FOR BETTER THINGS

The American Clay Machinery company, Bucyrus, O., has installed two new machines in its offices which are expected to materially aid in getting the office work done. A new electric adding machine has been purchased and installed and in addition to this a new multigraph has been purchased which will print several thousand letters per hour. Both machines are the best of the kind to be secured and are a big addition to the office equipment.

Some improvements have also been under way in the shops. The floors of the recently completed erecting shop have been paved with brick and the workmen are now engaged in cutting a driveway which will lead into the east side of the erecting room and which is also to be paved with brick.

INDEPENDENT BRICKLAYERS PROSPER IN CALIFORNIA

The Los Angeles (Cal.) Independent Bricklayers' Association is enjoying a prosperous period, and its membership has reached fifty-two skilled workmen who have thrown off the yoke of union tyranny. The independents are receiving the support of contractors and expect to do the work on the Federal building, the new gas plant and several other important structures to be begun immediately. Officers of the association say they have plenty of work in sight and could give employment to from twenty-five to fifty bricklayers right now, if they were available.

OGDEN COMPANY WILL GET FULL INSURANCE

The jury in the case of the Ogden (Mich.) Sewer Pipe & Clay company against four insurance companies, which has been on trial in the district court for several days, returned a verdict for the full amount asked for by the plaintiffs in the action.

The insurance companies are the Royal Assurance company of Liverpool, the Colonial Underwriters of Hartford, the Phoenix Insurance company of Hartford and the National Fire Insurance company. Each of these held risks on the buildings and machinery of the plaintiff amounting to a trifle less than \$2,000. This, together with the interest to date as figured by the jury, amounting to \$8,303.80, was awarded to the pipe and sewer people. The defendants were also taxed the costs.

The works of the Ogden Sewer Pipe & Clay company, located on Thirtieth street and Pacific avenue, were totally destroyed by fire October 16, 1906. Since that time the insurance companies have refused to pay the amount of the risk. Among other things they claimed that the proof of loss was not filed within the stipulated time.

THREW A BRICK AND KILLED HIS BROTHER-IN-LAW

Charged with killing his brother-in-law, Charles E. Lilly, 18 years old, Jacob Shuck, 35 years old, of Curtis Bay, Anne Arundel County, Md., is a prisoner at the Central Police Station until a jury of inquest determines in what degree he is responsible. Shuck, who is a foreman of the Chesapeake Brick Company and Lilly, who was a workman under his brother-in-law's supervision, had an altercation, and Lilly, it is said, cursed Shuck. The latter threw an unburned brick and struck Lilly on the head, knocking him into a pit about eight feet deep. Shuck picked him up, but Lilly was unconscious. Shuck and his wife, who is Lilly's sister, and Mr. John F. Schaeffer, Lilly's stepfather, carried the injured man into a wagon and drove rapidly toward the city. When the wagon reached the City Hospital and Lilly was laid on the operating table it was found that he had expired.

Shuck made no effort to evade the police and Shuck admitted throwing the brick, but said his brother-in-law had goaded him beyond endurance. At the coroner's inquest tonight Shuck will be represented by counsel, Mr. W. H. Lawrence, of Baltimore County.

DEMAND FOR BRICK IS PHENOMINAL

Owing to the rapid advance in the price of lumber in the last few years A. A. Buckingham, manager of the Northern Pressed Brick Co., of Crookston, Minn., reports that the demand for brick has increased very materially, that he has been unable to fill all the orders for brick sent in. This season his company has manufactured one and a half million common brick and an equal number of pressed brick and at that the plant was being run at half capacity owing to difficulty encountered with the machinery. Most of this brick was shipped out to the towns and cities tributary to Crookston and the rest of it was used here. The Northern Pressed Brick Co., has obtained the contract to supply the state with its product for the construction of the boys' dormitory at the Crookston Experimental station.

FIVE NEW STRUCTURES COST NEW YORK ENORMOUS FIGURE AND MADE FIRE PROOF BY CLAY

Eight hotels in New York cost \$50,000,000. With one exception, all built within the last five years, and that exception was only two or three years earlier. Latest of all is the new Plaza Hotel, at Fifth avenue and Fifty-Ninth street. Its cost was \$12,500,000. One suite is taken by a well-known financier at \$30,000 a year.

In building these hotels the most important pre-requisite was to secure the most complete protection against fire which modern science has developed. The floors and partitions therefore are built of terra cotta hollow blocks, which in the process of making have gone through a baptism of fire at a temperature of over 2,500 degrees hotter than any conflagration ever known.

The Belmont, opposite the Grand Central station, cost \$9,000,000 and, like the Plaza, has 800 rooms. The Ansonia cost \$4,000,000 and has accommodations for 1,500 guests. Together, the St. Regis and the Gotham, one on each side of Fifth avenue at Fifty-Fifth street, cost \$9,000,000, and have rooms for 800 guests. The Knickerbocker cost \$7,000,000, the Breslin, \$3,000,000 and the Astor \$6,000,000.

In contrast, as far as high prices are concerned, is the new Mills Hotel, at Seventh avenue and Thirty-Sixth street. This is for poor men and no room in it is higher than forty cents a day; the rate for most of them is thirty cents. There are 1875 rooms in this building. If they are all filled every night in the year—and that has been pretty nearly the case with the two older Mills hotels downtown—the annual receipts will be \$208,962.50, not including the restaurant receipts.

DECISION ADVERSE TO HAVERSTRAW BRICK MEN

Justice Morschauser, Brooklyn, N. Y., handed down a decision on Saturday, Oct. 26th, in the action of the Village of Haverstraw against J. Esler Eckerson and others, brought to restrain the excavation of land adjacent to the streets in the village of Haverstraw so as to destroy the lateral support of the roadways. Some of the defendants demurred to the plaintiff's complaint and presented a number of important questions of law to be disposed of by the court. The principal one was that the complaint did not allege negligence in the excavation or manner of digging. Judge Morschauser has decided that any unlawful obstruction or interference with the highway is of itself a nuisance, and that negligence in the digging need not be shown, and the owner of lands adjoining a street or highway has no right to remove, by excavating on his own land, the lateral support of the highway to render it unsafe for travel. The demurrer is overruled with leave to answer on payment of costs.

The brick plant of Judge Jas. E. Romig, at Hillside, Montgomery County, Pa., (in the suburbs of Philadelphia) which was recently equipped by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., with their best and most modern Machinery and the "Martin" Patented System of handling and drying 40,000 brick daily, is now in operation, making and drying 40,000 Brick every day, and which plant is conceded to be the best, most complete and most modern in the United States.

SAND OR LIME BRICK OR BLOCK NEWS

The Board of Trade at Palestine, Texas are considering the building of a sand-lime brick plant at that place.

The Cement Tile Works at Bancroft, Iowa, burned to the ground and is a total loss. It is understood that the factory will be rebuilt.

The Warren Brick Co., Bainbridge, Ga., is the successor to S. J. Warren. They will rebuild the burned sand-lime brick plant. Plans are not yet made.

The Marysville (Yuba Co., Cali.,) Sand-Cement and Brick Co., has been organized with a \$5,000 capital stock by Michael Reisinger, president, F. P. Kupser, vice-president, J. M. Morrissey secy., and J. P. Arnoly treasurer.

The American Sand-Lime Brick Co., Great Northern Bldg., Chicago, report several new contracts for complete plants, and will soon furnish our readers with views and description of one just being completed.

The Savannah (Ga.) Sand-Lime Brick Co., which operated in sand-lime brick plant near Eden, Ga., has been placed in the hands of a receiver. Barron Cater, cashier of the Commercial Bank has been named. Differences between the directors and the secretary-treasurer, Mr. G. B. Whatley caused the trouble.

Colby M. Avery, formerly the engineer of several of the largest Sand-Lime brick plants in this country has opened an office at 39 Cortlandt St., New York. He will make plans and design sand-lime brick plants independent of any firm or line of machinery. Mr. Avery's experience ought to make him a very safe engineer in this line.

W. T. Jay, Shellman, Ga., wants machinery for making cement tile.

The Gary Granite Brick & Stone Co., Gary, Ind., has been organized with \$75,000 capital stock. O. C. Borman and N. C. Kunert of Toleston are interested.

The Enamel Brick & Concrete Co., Seattle, Wash., has been incorporated with \$200,000 capital stock by Westley Compton, Jasper Compton, and George W. Bailey.

J. H. T. Martin, receiver for the Silica Block & Brick Mfg., Co., of Sewaren, N. J., sold the entire assets to the Boynton-Chambers Co.

The Illinois Granite Brick Co., has been organized at Chicago with \$250,000 capital stock. Incorporators are Oscar M. Steffens, Joseph A. Grober and Arnold D. McMahon.

The Fellers Stone Co., Roanoke, Va., has been incorporated and will manufacture lime, brick and concrete. E. B. Fishburn is the secretary and treasurer of the company.

Jacob Fostner, a mechanical engineer is endeavoring to interest Oshkosh, Wis. business men into organizing a sand-lime brick company.

The Universal Cement Brick & Block Co., Webster Ave., & 200th Street, New York, is in the hands of a receiver. Fred J. Phillips was appointed and an involuntary petition has been filed by creditors.

The Buffalo (W. Va.) Brick & Tile Co. has been incorporated with \$10,000 capital stock to manufacture cement blocks, drain pipes, tiles and sewer pipes. The incorporators are W. C. Nash, O. H. Hardy, E. D. McCoy, W. T. Johnson, of Buffalo and R. E. McCabe of Charleston, W. Va.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

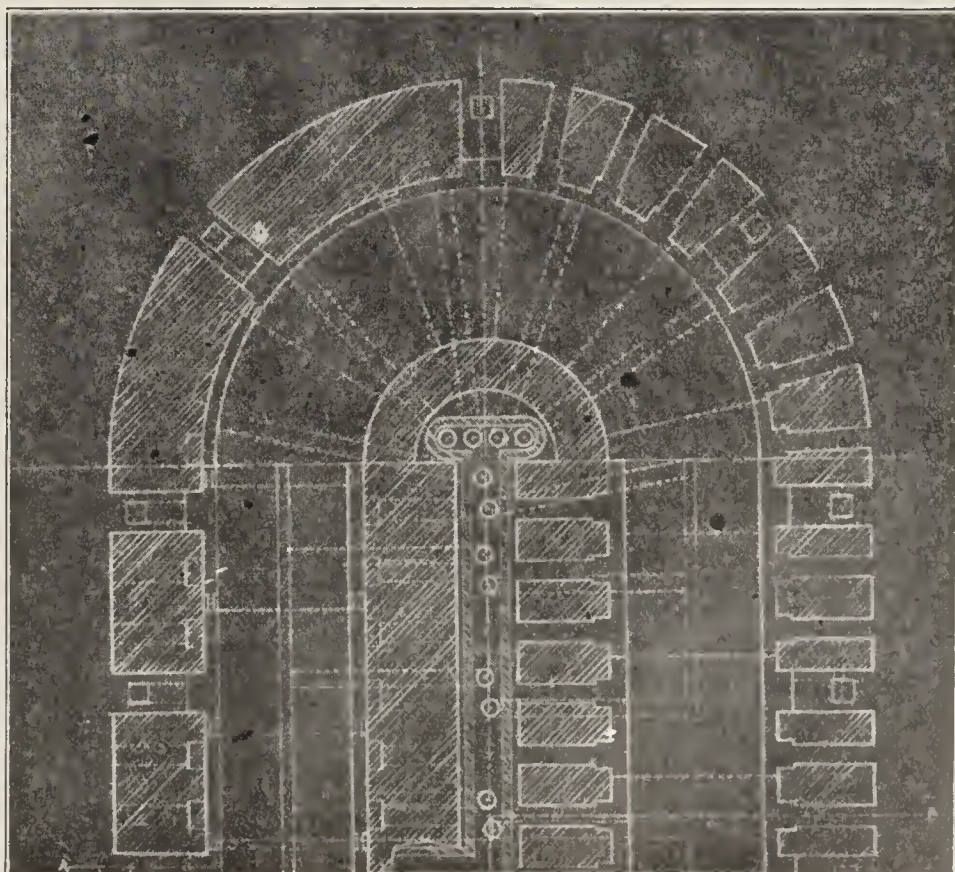
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

MISCELLANEOUS ITEMS

The Columbia Silica Co., Portage, Wis., has been formed by A. J. Calkins, C. P. Jaeger and F. H. Runkel.

The Builders' Brick Co., Seattle, Wash., is building a two story factory on Ninth Ave., south.

A brick making plant is to be established near National Park, N. J.

The Sidney Brick & Tile Co., Sidney, B. C., is the name of a new company that will manufacture brick, tile, etc.

The Standard Brick Mfg., Co., Evansville, Ind., have decided to erect a large brick dryer at their First Avenue plant.

The Portsmouth (O.) Gas Co., has closed a contract to supply the Mead Brick Works on Gallia pike with natural gas with which to burn their ore.

The plant of the Burke Brick Co., at Ft. Smith, Ark., has been run for a week, running as smooth as a clock works. The making of brick on regular is now started.

The Amarillo (Texas) Pressed Brick Co., has completed its large plant and begun operations. B. H. Lewis is at the head of the new company.

A. J. Stewart, son of the late James Stewart, Aberdeen, Wash., is making a great effort to refine the brick industry at Grays' Harbor.

The Boone (Ia.) Brick, Tile & Paving Co., has recently completed at the cost of \$11,000 the waste heat drying system, thus increasing the capacity of the plant.

The St. Joe Brick Works, Pearl River, Louisiana, have recently added to their plant a "Martin" Compound Granulator to further improve their yard, furnished by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

W. W. Bly, formerly of Rushville, Ill., and two other gentlemen from Schuyler Co., Ills., have bought land in Shelby, Mo., and propose to establish there a brick and tile plant.

The United States Steel Corporation has decided to manufacture fire brick for its own use in the Pittsburgh, Pa., district, and may buy up some of the fire brick plants in that section.

The Salt Lake Pressed Brick Co., Salt Lake City, Utah, has purchased a quarter of a section of land, which was underlaid with valuable clay and shale. The consideration was \$28,000.

The Missouri-Kansas Shale Brick Manufacturing Co., Kansas City, Mo., has been incorporated with \$250,000 capital stock. Incorporators are John W. Neff, A. R. O'Brien, and Chas. A. DeHaven.

The Ellwood Brick & Limestone Co., Ellwood City, Pa., has been incorporated to manufacture brick and sell limestone. The incorporators are John M. Montgomery, Thomas J. Fulmer and Frank H. Douthitt.

The Buffalo (W. Va.) Brick & Tile Co., has been incorporated with \$10,000 capital stock. Incorporators are M. C. Nash, O. M. Hardy, E. D. McCoy, W. T. Johnson and others.

The Clay Products Co., of Texarkana, Ark., has been incorporated with \$25,000 capital stock. John T. Owsley, is president, Ralph G. Moore, vice-pres., F. W. Mullins, treasurer, and T. E. Howe, secretary.

A scheme for the establishing of a brick works near West Chester, Pa., is being considered by a prominent manufacturer of the county.

The Tonque Pressed Brick & Tile Co., are installing their machinery at Algodones, N. Mex., and will soon have their plant in running order.

R. E. Whitacre of Los Angeles, Calif., has bought out the interests of Messrs Durant and Bush, in the Terra Cotta Works at Elsinore.

All the shale brick manufacturers of York, Pa., and vicinity have agreed to merge their interests into a company which will be capitalized at \$275,000.

Work on the construction of the plant for the Corning (O.) Clay Manufacturing Co., was started the 21st and it will be carried to completion as fast as possible.

The Allentown (Pa.) Paving Brick Co., whose plant at Guth's Station on the Catasauqua & Fogelsville Ry., is to resume operations after a period of idleness.

The Lowe Brick Co., New Paltz, N. Y., is still running with a full force of men, and they fear that they will not be able to fill all their orders before the winter sets in.

The St. Louis (Mo.) Terra Cotta Co., have bought a new site adjoining their plant in Cheltenham, and will build a \$150,000 plant upon same soon as the plans can be perfected.

The West-Greigg Brick Co., of Eldorado, Ills., has been incorporated with \$14,000 capital stock. Incorporators are Roy Greeg, L. F. West and Alta J. West. They have taken over the West Brick Works.

The Rockton (Ills.) Moulding Sand Co., has been incorporated to deal in sand, brick & tile. The incorporators are William Neese, Chas. F. Sachrist and Charles B. Courtney.

J. T. Buckley, for several years manager of the Sheridan Brick Works at Brazil, Ind., has accepted a position as traveling salesman for the Western Brick Co., of Danville, Ills.

P. N. Swenson, W. A. Drowley and Harry Sprink of the Tramway (Wis.) Brick Co., are about to establish a tile plant at Virginia, Minn., when the clay has been treated and pronounced fine.

Messrs Booth and Hedges who own the Rich Hill (Mo.) Brick & Tile Works have erected five new down draft kilns and will build five more. New machinery and a general overhauling of the plant will follow.

The Hanover (O.) Red Pressed Brick Co., has been incorporated with \$130,000 capital stock. They take over the Hanover Pressed Brick Co., plant and will enlarge it. Incorporators are C. H. Forry, George W. Havens, P. S. Phillips, William H. Smith and C. C. Forry.

S. W. Vance, president of the Crookston (Minn.) Brick & Tile Co., states that the demand is far ahead of the supply of brick and that 1,000,000 have been sold for future delivery. They contemplate several improvements which will facilitate the manufacture and enlarge the capacity.

The Karthaus (Pa.) Fire Brick Co., have discovered through efforts of Geologist Isaac A. Harvey that their property is underlaid with six veins of coal ranging from two to five feet in thickness. They also have found some finer clays.

The Central Brick Manufacturing Co., Chicago, has increased the number of its directors from three to five.

The Wabash Ry., through its department of industry is making inquiries for a location of a clay works near Symerton, Ill.

The new plant of the Junction City (O.) Clay Products Co., opened in a fitting manner on October 23d. The general public was invited to be present.

Martin Bros., Portland, Ind., have sold their brick and tile works and are testing clays from Forest City, Iowa, with a view of building a large plant there in the spring.

Isaac L. Lucus, the well known Dover, N. H., brick manufacturer will enlarge his yard and greatly increase its output. William C. Norcross of Boston, Mass., will be associated with him.

F. H. Hyatt, Columbia, S. C., has discovered a deposit of the finest quality of shale on his farm near the city, and is investigating same with a view of organizing a company to work the deposit.

The plant of the Standard Terra Cotta Co., Perth Amboy, N. J., one of the four corporations in the Atlantic Terra Cotta Co.'s. combination is being operated independently same as the other three companies. T. S. Truman is the superintendent.

T. H. Buchanan, a well known real estate man of Grinnell, Ia., has formed a partnership with C. A. Smith, who has been the manager of the Grinnell Brick & Tile Works, and he will hereafter devote most of his time to real estate and will continue as manager of only the sales department of the brick company.

Max Frauenthal, Heber, Ark., wants information on brick machinery.

J. H. Allen, mayor at Bastrop, La., wants brick making machinery.

Oscar High, Whiteville, N. C., will install machinery for the manufacture of drainage tile.

F. B. Davidheiser, of Stowe, Pa., has started fire under the first kiln of brick at his new plant, which makes 3,000 machine brick daily.

G. T. Green, Weatherford, Texas, with others contemplate developing deposits of fire clay which he has recently discovered near the town.

The Missouri Slope Brick & Tile Co., Dickinson, N. Dak., are adding another large kiln to their plant, thus increasing the output very materially.

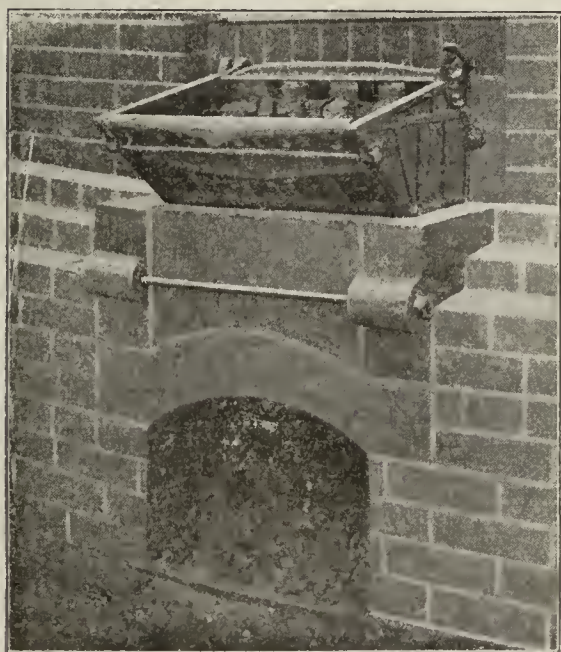
The Columbia Clay Co., Kennerwick, Wash., has received their brick marking machinery and are now installing same. The buildings have already been erected.

The Okmulgee (I. T.) Brick & Mining Co., has completed its plant of 50,000 daily capacity and it expects to double it in the near future. S. J. Allen is the manager.

Tobias & Sheridan, operating a brick plant at Harrisburg, Pa., on the west side has closed down for the season. They expect to make extensive improvements to the plant during the winter.

The Chehalis (Wash.) Brick & Tile Co., which was originally started on a small scale is gradually increasing its capacity. The latest improvement to be added is the construction of a steam drying room. Messrs Bickford and Burrows are the owners.

**The GILLETT DOORLESS
Hot Air FIREBOX For
Blast Kilns**
Patent No. 792.769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo.

ALEDO, ILL.

**DIRECT HEAT
DRYERS**

**FOR
BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

CLAY RECORD.

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

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Where a country is tiled, factories are offered complete, or in part. Cheap. Have several Brewer Mills for sale, and others.
Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
Brick and Tile Machinery
Secor, Ill.

FOR SALE

One Quincy Clay Gatherer and Plow. Brand new, in use only two weeks. Address,
Elk City Brick Co.
Elk City, Kansas.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.
American Enameled Brick & Tile Co.
1 Madison Ave. New York

A SOUND PROPOSITION FOR N. W. ALBERTA, CANADA

WANTED—Manager and Superintendent who can introduce capital to equip a complete Brick making plant on my clay field, of 60 acres, proved at 40 feet and analyzed by The Henry Martin Brick Machine Mfg Co., Pa., U. S. A., who recommend using the following outfit: Martin Style "P" Disintegrators, and Style "A" Brick Machine for Moulding, and the Martin Steam Brick Dryer.

The situation of the field is close to the railway siding of Claysmore, on the C. N. R., 6 miles from Vermilion City, the bull's-eye of the famous Saskatchewan Valley, and the Vermilion District, where bricks are now selling for \$20.00 per thousand and great demand at that. Address,

ALEXANDER EASON,
Pioneer Builder and Contractor
Vermilion,

N. W. Canada

Alberta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
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39 Cortland St., New York.

50 PERCENT SAVED

Fifty percent saved on the cost of your present system of drying. I will install my drying apparatus independent of your system, and in conjunction with it. Will cause no interference or delay. Terms either royalty or cash.

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WANTED

Superintendents, Managers; Experts, also office and Salesmen with brick, tile, pipe, or building material experience. Write,
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A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address
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Old established yard in good town of 5,500 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address
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Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address
GEORGE BARNEY,
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WANTED

Wanted Stoneware Potter—both wheel and Kiln men. Write to
SPOKANE POTTERY CO.
Clayton, Wash.

BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant, local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the
BUSINESS MEN'S ASSOCIATION
Jacksonville, Illinois

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Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.
THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.
L. T. LEE, Zenith, Ga.

PLANT FOR SALE

A good steam brick plant for sale, Chambers Bros. Co. Brick machinery, engine and boilers in first class order. Lease expiring.
JOHN HANARTY & SON
58 and South Streets
Philadelphia, Pa.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:
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MACHINERY FOR SALE

Soft mud outfit manufactured by the American Clay Working Machinery Co., consisting of Upright Stock Brick Machines direct attached Pug Mill, Mold Sander Brick Molds, 5 Leaf Dump Table, 10,000 Wooden Pallets. All in fine condition; very reasonable price. Apply to
BALTIMORE VITRIFIED BRICK CO.
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On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write,
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WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.
CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address
DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 15 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address
J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Jiggers quoted.
R. A. HART, 41 White St.,

No better made, cut from \$3 and \$13, to 4 Wheel, \$3.00 5 Wheel, \$3.25 Guaranteed. Sold by all dealers. BATTLE CREEK, MICH

BUSINESS WANTED

I can sell any business or real estate that is salable no matter where located. I reach the people who buy. A trial will convince you. Established in 1881. If you want to buy or sell, address,

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1726 Adams Express Building
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FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete, 50,000 vitrified brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant.
LIBERAL BRICK & TILE CO.
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SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,
Care Clay Record, Chicago, Ill.

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.
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WANTED—Second hand cars and track. Give lowest price and condition in first letter.
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FOR SALE—A 75 H. P. Gas Engine, complete with air tank and gasometer, in good condition. Let go cheap if sold at once. Answer,
Gas Engine, care Clay Record
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At Wenona, Illinois, one million tons of material, located on "Y" of Illinois Central and Chicago Alton railroads. 100 tons of new material dumped daily. Will make good paving brick and front building brick. Coal mine adjacent, Plenty of artesian water. For information address:
WENONA COAL COMPANY
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One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co. ~~also~~ Sandusky Portland Cement Co.
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FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.
BELLINGHAM BRICK & TILE CO.
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ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.
709 Chamber of Commerce,
Astoria, Oregon



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FROST RESISTANCE OF BRICK

By George E. Walsh.

The nearer brick making becomes an exact science the more satisfaction will be given to manufacturers and builders. The elimination of guess-work and unknown factors in the manufacture should be the aim of every reputable firm. Builders of modern high-grade city structures are changing their methods rapidly, and we find the work drifting into the hands of large building contractors who guarantee the quality of all materials used in their structure. They employ experts in the different departments to inspect the work and materials, and as a result anything which fails to come up to the required standard is rejected. It is becoming more difficult every year to dispose of poor bricks, while those which have a high standard of quality rarely fail to find a profitable market.

In the use of building materials most reputable architects agree that bricks are the most serviceable of all artificial products. They represent the right unit for giving variety and stability to walls, and they are durable in fireproof. In the present fireproof building movement bricks stand pre-eminently to the front as the most useful for general work. Since the San Francisco fire the supply of bricks on the Pacific coast has been far below the demand. A good many inferior bricks were used in the old San Francisco buildings, and they must have been partly instrumental in permitting the fire to extend beyond the control of the fire department. A good brick wall, fireproofed on the inside with hard burnt terra cotta porous blocks, and on the outside with structural terra cotta blocks, is probably the best fire-proof thing that can be erected. In tests made in the laboratories in New York and Chicago such a wall withstood temperatures up to 3,000 degrees without crumbling or being seriously impaired. Such walls up to the fourth and fifty story represent the best which modern science has accomplished.

Higher buildings require the re-enforcement of steel frames. When the steel frames are erected, however, they are intended to carry the loads of the different floors, and

are not supposed to withstand fire. They demand perfect protection from high temperatures by an outside and inside wall of bricks or terra cotta. Up to the eighth and tenth stories of such buildings good fireproof bricks are considered the most suitable by architects, but in the twenty and thirty-story structures structural terra cotta blocks are being largely employed owing to their relative weight. They are so light in weight that they decrease the load on the steel frames, and thus secure a rigid wall of great height with the minimum amount of metal framework.

The demand for burnt bricks is therefore an important factor in the present building movement. More burnt bricks which will withstand a high temperature are used today than ever before in the history of the trade. These bricks roughly divide themselves into two distinct classes. One is ordinary burnt bricks for the protection of steel work, but without any ornamental qualities. They are used inside of the walls, and are put up to receive a face of stone, terra cotta, marble or other ornamental material. Their chief quality is their high fire resistance. It does not matter whether they are carefully molded and pressed or even if their ends are a little rough and chipped. But like fire bricks they must be able to withstand a high temperature without disintegrating. The other class of bricks are fireproof, and at the same time ornamental. They are face bricks used in fireproof walls. They must contain a high fire resisting quality and prove sufficiently ornamental to make their exposure in the walls attractive.

These points in brick making are fully appreciated by many manufacturers, and the qualities have become fixed factors. The manufacture has been reduced to an exact science, and as a result builders of the better class employ them unreservedly. Nothing has influenced the fireproof building movement more effectually than the makers of first-class fireproof bricks.

But there are other qualities which demand immediate attention. The effect of frost on bricks is of paramount importance. Heat and cold affect iron and steel to such an extent that contraction and expansion involve many nice little calculations in putting up a skyscraper. To a large

extent the brick walls which protect the steel must serve another purpose. They must protect the metal from dampness and rapid changes in temperature. It is true that many kinds of waterproofing material, either paint or paper, are used to protect the iron and steel from atmospheric dangers, but builders rely more generally upon the bricks to secure the results desired.

There has been a great deal of experiment carried on among builders in the last year for the purpose of finding out the relative value of good bricks in protecting steel frames from heat and cold. The outcome of these experiments may add more scientific data to the building problems. It will result in the call for a more accurate classification of bricks for special purposes. Manufacturers of bricks will furthermore be helped in their work by consulting such data.

Now as a fact bricks differ so greatly that it is impossible to lay down any rule in regard to their action under certain atmospheric conditions, and yet it is a simple proposition to manufacture bricks of a certain standard grade which will under all conditions yield the same general results. It is this standardization, as it might be called, which builders are seeking.

Before exact scientific data in the making of bricks enabled manufacturers to produce uniform standards bricks were pretty much the same, and a good many erroneous ideas concerning them were prevalent. Brick making was in a primitive stage then, and the products of the trade were pretty crude. Their resisting power to heavy weights or loads was not great, and their disintegration under certain conditions was a foregone conclusion. Thus the action of frost on bricks was important and one of the agencies which tended to injure the character of this building material. Bricks were not then supposed to withstand the frost well at all under adverse conditions. Thus if they were soaked with water, and then exposed to a freezing temperature, they would crack or burst open owing to the rapid expansion. This fact discredited bricks for foundation work or for walls where there was a constant exposure to dampness. Those early bricks were very porous, and they absorbed an immense amount of water, and this in changing to ice did cause ruptures which might endanger the stability of walls.

Yet on an examination of many of the old houses of early days in which bricks were used for foundation of walls we find that they withstood the action of freezing very satisfactorily. On the other hand foundations built nearby cracked and tumbled down within a few years. The difference was in the making of the bricks. Some of the early brick makers discovered the value of reducing the porosity of their bricks for foundation work so that they would absorb less water. The porosity of the bricks must to a large extent even today determine their usefulness for foundation work and for street paving. Indeed, in the use of bricks for paving and for sewer work the porosity of the materials is a factor which determines to a large extent their value.

The frost resistance of bricks, and their loss of stability after being subjected to freezing, are points which are of

vital importance to a wide list of trades and industries. It is a well known fact that some bricks which are not subjected to any particular compression can be very porous without materially losing their value. When placed firmly in a wall or pavement, the action of freezing does not materially weaken them unless a heavy compression is applied to them at the moment of great expansion. Thus pavement bricks of great porosity may not be injured, but if a heavy truck passed over them when frozen they would crack and break in pieces. A sidewalk thus laid with bricks of great water absorption qualities might endure indefinitely, but a street pavement where heavy traffic is accommodated would break and disintegrate rapidly.

Similarly bricks for a two or three story structure might last even though subjected to great freezing, but if they were employed in a ten or twelve story structure there would be danger of a collapse through the weakening of the foundations. In making bricks for any particular line of work, therefore, it is essential that their relative density and porosity should be considered as well as other qualities. Builders are studying this problem more and more, and they demand for certain work bricks which will suffer the least from freezing.

Paving bricks are or should be made for the most part of very dense material, so that the percentage of water absorption is comparatively small. The best paving bricks contain as low as 2.41 to 3.31 per cent of water absorption, and the best buff face bricks even as low as 1.32 per cent. From these dense bricks we can go up to common backing-up bricks with a percentage of absorption equal to 20 to 25 per cent. Common wall bricks contain from 7.70 to 13.70 per cent of water absorption, while many machine-made bricks prove very good for general use with a water absorption possibilities of 12 to 19 per cent. Good sewer bricks have a porosity sufficient to permit of an absorption of water equal to 8.40 per cent.

Good face bricks range from 3.50 to 12 per cent, and hard burnt brick about 5 per cent. Arch bricks have a porosity of a high degree without affecting their value. As a rule the greater amount of water that the bricks absorb the greater will the danger be in freezing. The expansion is naturally greater in bricks which contain an unusual amount of water. But it is not a conclusive fact that the porosity of the bricks necessarily determines their usefulness. There are variations in the different bricks tested which indicate that the loss of stability through freezing is merely one factor in the situation. Much depends upon the strength and compression of the bricks. A paving brick with a high compression and a moderate porosity will often lose in stability much more than another with a moderate compression and greater porosity. A nearly vitrified brick will show probably the least loss of stability from freezing, although variation in vitrified bricks is sufficient to prevent any general rule. A hard faced brick with a porosity sufficient to allow a water absorption of 4.19 per cent, and a compression of 1.197 pounds, showed after severe freezing a loss in stability of only 5.1 per cent, while a paving brick with a compression of 764 pounds and a percentage of ab-

sorption of 2.41 showed a loss of stability of over 45 per cent. The reason for this loss must have been in the composition of the brick and the method of making.

Some go so far as to claim that there is no relationship whatever between the porosity of bricks and their frost resistance, and to discover the cause of the latter we must look into the ingredients of the bricks and their methods of mixing and baking. The loss in compressibility in bricks after freezing is one of the peculiar results which seem to carry out this conclusion. The loss of stability in some bricks is insignificant, and in others quite startling. In a few tests the compressibility after freezing has actually increased, and instead of a loss of stability there has been an improvement. This is particularly noticeable in very porous bricks. A series of tests showed that a backing-up brick with 16.31 percentage of absorption, and a compressibility of 249 pounds was stronger and better after freezing nearly 25 per cent. Its compression after freezing was 310 pounds. This test, however, was unusual, and simply indicates the wide range of variation possible. A face and paving brick with 7.82 percentage of absorption and compression of 444 pounds instead of showing a loss of stability after freezing gained 9.9 per cent. Gains in stability of 1 to 3 per cent in backing-up bricks, face brick and common brick after freezing are quite common, but few if any instances are on record showing a gain in stability from freezing with any of the dense bricks with a very low porosity and small water absorption.

In making tests with such bricks by freezing not one but a dozen and sometimes twenty and thirty freezings and thawings were necessary to establish any reliable data. The effect of one freezing is not very great. The bricks show a slight readjustment of parts and a tendency to open in slight crevices, but these are so minute that they are scarcely noticeable to the naked eye. Even the second and third freezing merely tends to emphasize these small lines in places. But the first lines are generally the natural fractures which subsequent freezings and thawings increase and cause eventually to break.

Many attempts have been made to overcome this tendency to weakening of bricks under freezing, and bricks made with a large percentage of pure clay and silica have resisted thirty freezings and thawings without any material loss. The question of securing bricks which will have a high porosity and a very great resisting power to frost is one that can only be answered by scientific tests and experiments. The need for such bricks is imperative, and science should be able to solve the problem to the satisfaction of all. With the increased use of bricks for paving, sewers and foundation work it is essential that uniformly standard bricks of great frost-resistance should be made so that contractors can depend upon them for all classes of work. The reputation of a contractor or engineer is often dependent upon the quality of his materials, and if bricks of the right quality cannot be obtained he will resort to cement and concrete. Yet bricks should be made which will resist frost better than concrete at less actual cost.—The National Builder.

THE PRODUCTION OF COMMON BRICK

Of the long list of mineral products of the United States concerning which statistics are collected by the National Geological Survey, only three—pig iron, copper, and bituminous coal—exceeded in value in 1906 the products of the clays; and of the clays themselves the product ranking highest in value was, as heretofore, the common brick, of which more than ten billion to—be exact, 10,027,039,000—were marketed during the last year. The value of this great product amounted to \$61,300,696, an increase of \$93,687 over the value for 1905, and constituted 47.30 per cent of the value of all the brick and tile products and 38.07 per cent of the value of the entire product of the clay industries.

The largest production of common brick in 1906, by any one State was reported by New York, whose output amounted to 1,535,579,000 brick, valued at \$9,205,981, or about \$6 per thousand. This quantity represents 15.31 per cent of the entire output of the country, and the value is 15.02 per cent of the total. The greater part of New York's common brick comes from the Hudson River region, which is one of the most interesting centers of the clay-working industries in the United States and has for many years been the almost exclusive source of supply for the common building brick used in New York City.

Next to New York, the largest producer of common brick in 1906 was Illinois, which reported an output of 1,195,210,000 brick, valued at \$5,719,906, or \$4.79 per thousand. The great common-brick producing region of Illinois is Cook County, and it was the decline in price in this district that brought the average price per thousand for the State to \$4.79, the lowest for several years.

The only other State reporting more than a billion common brick was Pennsylvania, whose marketed output amounted to 1,027,541,000 brick, valued at \$6,586,374, or \$6.41 per thousand. While third in quantity the product of this State was second in value, and the average value per thousand was greater than that for either New York or Illinois.

Ohio's production of common brick in 1906 was fourth in quantity and value—550,422,000 brick, valued at \$3,243,157 or \$5.89 per thousand—and New Jersey's was fifth, amounting to 413,258,000 brick, valued at \$2,610,686, or \$6.32 per thousand. The other States range from Kansas, with 314,371,000 brick, valued at \$1,376,552, or \$4.38 per thousand, to South Dakota, with 6,064,000 brick valued at \$54,175, or \$8.93 per thousand. California's 278,780,000 common brick were valued at \$1,962,866 or \$7.05 per thousand.

The average price per thousand for common brick in 1906 ranged from \$9.69 in Wyoming to \$4.38 in Kansas, the average for the whole country being \$6.11. The State whose average per thousand most nearly approached the general average was Tennessee, where the average price was \$6.13 per thousand.

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the clay-working industries, by Jefferson Middleton, of the United States Geological Survey, is now ready for distribution by the Survey.

REDUCING THE COST OF POWER

With the rapid increase in the use of machinery which has taken place during recent years in the clay industry the cost of power has become one of the largest items of expense, and as there is a strong tendency for the cost of fuel to rise so there is a continually increasing expenditure on power as times goes on, says the British Clayworker.

Hence the possibility of reducing his expenditure in this direction is a subject which appeals to every manufacturer of clay goods, and as no improvements in power production have been so effectual as the comparatively new "suction gas-producer," the relative advantages and disadvantages of this form of power generation may be usefully set out here.

The enormous waste of energy in steam engines is well known, but the various uses which the clayworker can make of steam—for drying, etc.—have made him contented to go on using a wasteful form of engine, and so long as the amount of power required could be supplied by his boilers he has been in the habit of thinking that either his engine was being driven for nothing and his floors cost a lot in steam, or his engine was wasteful but the drying floors, etc., made up for it by costing nothing.

This is a seriously mistaken attitude to adopt, and, where sufficient capital is available, it would amply repay the owner to replace his steam engines by a more economical gas engine, with a suction gas-producer.

The method of producing the gas is extremely simple, and there is no possibility of explosion, unless rank carelessness is shown. In fact, a suction gas-producer is much safer than a boiler at 80 lb. pressure.

The gas is produced by the very slow burning of anthracite coal or coke in a special furnace, combustion being aided and a larger quantity of gas being produced by means of a small jet of steam produced quite automatically from water heated by waste heat in the gas. The gas produced is contaminated with tar and similar products, and is purified by passing through tanks filled with coke breeze, over which a small current of water flows. In some cases a sawdust box is also used to catch any further impurities.

In order to start the engine a small hand-driven fan is used to blow up the fire (after the manner of the old-fashioned bellows), but once started the whole process proceeds automatically, except when the hopper has to be filled with fuel—an operation requiring about ten minutes a day.

The following table shows the relative cost of power with regard to fuel consumption:—

Type of Engine	Kind of Fuel	Price	Fuel per Brake Horse Power per hr.	Cost of 100 B. H. P. per 10 hrs.			
					£	s.	d.
Petrol engine....	Petrol.....	6d per gal.....	1 pint		3	2	6
Gas engine.....	Town's Gas	2s. per 1000	20 cu. ft.		2	0	0
Ordinary steam engine.....	Steam coal	10s. per ton	8 lb.		1	15	9
Compound steam engine.....	Steam coal	10s. per ton	4 lb.			17	10
Producer gas plant.....	Anthracite or coke	16s. per ton	1½ lb.		10	9	

With the aid of the above table the cost in different localities may be ascertained by substituting the different cost of fuel, but taking the figures as a fair average, it will be seen that a clear saving of one-third to two-thirds of the present cost of fuel can easily be made.

Add to this the saving effected by the attention of a man for not more than two hours per day to do all that is necessary in cleaning the producer and engine, and the wonder is that gas engines are not far more popular in clayworks than they are at present.

Another matter which should appeal to the clay man, though, we fear, it does not always do so, is the much greater cleanliness possible with a gas producer, partly owing to the difference in the plants themselves, but more especially to the absence of steam.

With regard to the space occupied the advantage is all on the side of the producer and gas engine, whilst the fact that the life of such a plant is greater than that of a steam engine and boiler, with practically the same capital outlay in the first place, is a still better reason why power plants should be introduced into clayworks whenever the opportunity arises.

If, instead of "suction producer," a "pressure producer" is employed, gas for illuminating and other purposes may be prepared, and this will usually compensate for the apparent loss, through having no steam available for drying purposes.

The steam difficulty is, however, much less than it is thought to be by many clayworkers, for a very small boiler working at a very low pressure will supply ample steam for all the drying requirements of even a large yard, and at a much more economical rate than when large boilers are used for the purpose, and for driving engines at the same time.

The special fuel used in producers is also a subject on which clayworkers often err, because they imagine that a very expensive fuel is needed. In all cases of expense it is not the cost per ton of the article purchased which has to be considered, but the cost per unit of power obtained. From this latter standpoint the small amount of fuel required fully compensates for its higher market price, and brings the actual cost of fuel far below that required for steam engines.

Furthermore, the various producer manufacturers are rapidly improving their appliances, and already certain kinds of ordinary steam coal can be used with good results. It is not, therefore, too much to hope that in the course of a year or two still further economies will be reached by the employment of cheaper fuel than the anthracite or coke now employed.

There are some cases where steam will still continue to be used for heating purposes, and where the conditions of the works render it cheaper to do this with a battery of boilers supplying steam engines at the same time, but in most cases the advent of the suction gas-producer has opened up a new era in the production of power for clayworks purposes, and will undoubtedly come to the front where power, as distinct from heating, is the requirement of the manufacturer of clay goods.

RAPID PROGRESS IN BUILDING DRY PANS

Perhaps no class of manufacturers has made more rapid progress within the last decade than that devoted to the manufacture of brick and kindred products. It can safely be said that the advance has been largely due to the designing and perfecting of machinery especially adapted for this purpose. Foremost among these improvements and one which has had more to do with the success of the clay-working industry has been the introduction of latest improved Dry or Wet Pans.

We take much pride in placing before our readers the very latest machinery in this line, for reducing the raw materials ready for the Brick Machinery.

This 9-ft. Dry Pan is under-driven, the heavy Bevel Gears being protected from the dust and clay, and well shrouded, and so arranged that the grease and oil can be applied and retained without any difficulty whatsoever. The gears are easy to get at to repair or to examine. The shafts are very heavy and short. The journals are long through the bearings. The Step Box is of large diameter, and ball-bearing, the steel balls being 3 in. in diameter.

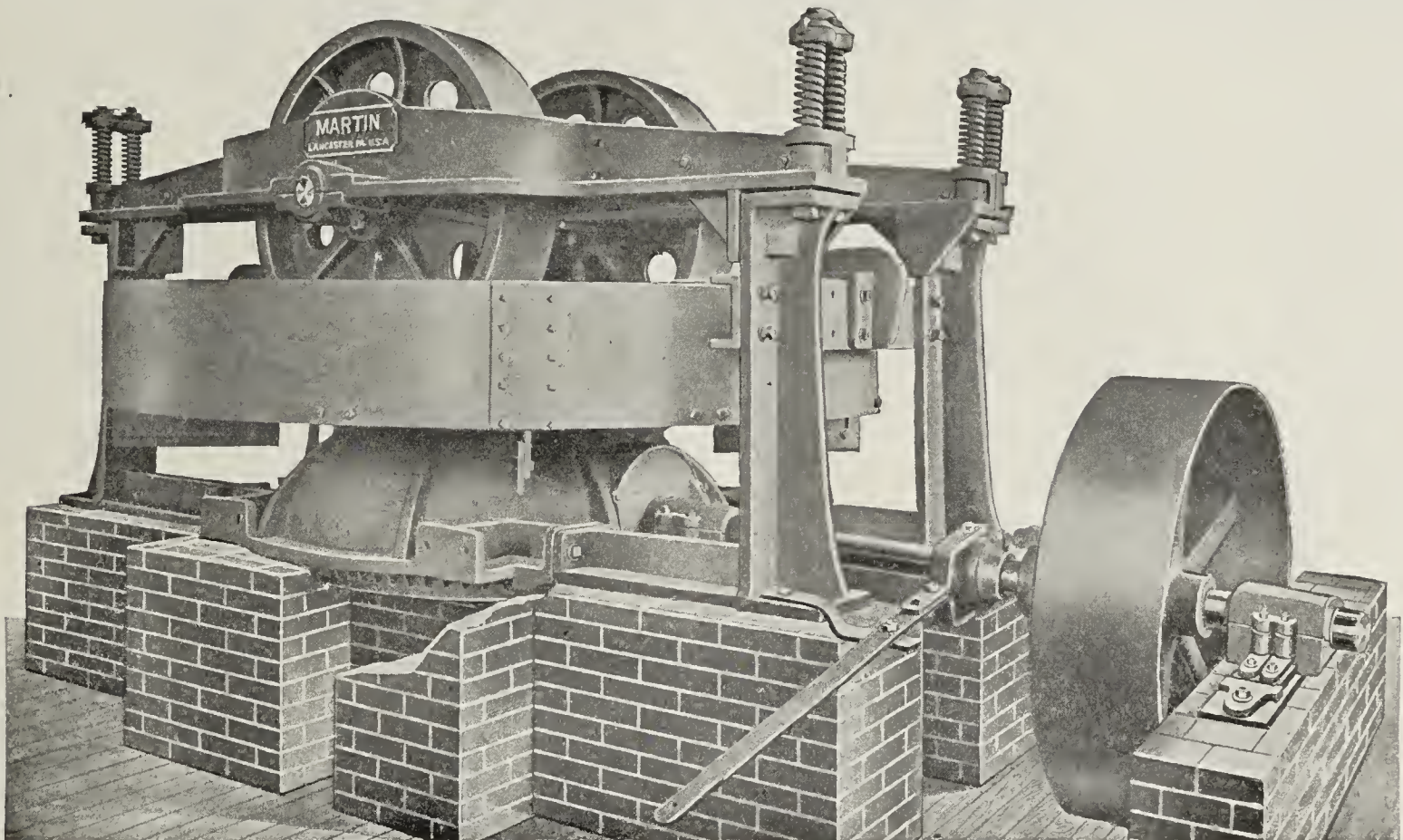
GULF STATES BRICK COMPANY WILL INSTALL MORE EQUIPMENT

There recently was an important meeting of the directors and stockholders of the Gulf States Brick Company held in the company's offices in Beaumont, Texas.

Mr. Newton R. Wilson, vice president of the Industrial Lumber company, who is president of the Gulf States Brick Company, presided at the meeting and Messrs. Ernest M. Loeb and T. J. Feibelman, large stockholders in the company, of New Orleans, La., were present.

The stockholders ratified the decision reached at a meeting of the directors about a fortnight since and decided to abandon the use of oil as fuel for firing the kilns at the two large plants of the company, operated near the city, and return to the use of wood. To this end the timber located on a tract of land, between 1,400 and 1,500 acres of land controlled by the company, will be put in cordwood and utilized as fuel. Heretofore oil has been used for fuel but the high prices now prevailing renders its use prohibitive as fuel.

It was also decided to make extensive improvements in the plants and equipment, the same to be carried into effect



MARTIN'S NINE-FOOT UNDER DRIVEN, BALL BEARING, DRY PAN

The Mullers are solid and made up of hard channel iron, with soft centers. Each Muller is independent of the other, and is held in place by the heavy yoke, which adds to the crushing weight.

The Pan revolves. It is neatly designed, heavily proportioned throughout, and has a Friction Clutch with large iron pulleys, so that the Pan can be gradually started and instantly stopped.

These 9-ft. Dry Pans are carried in stock or in course of construction, and will be on exhibition in the Ware-rooms at the factory of The Henry Martin Brick Machine Manufacturing Company, Lancaster, Pennsylvania, who are making a full line of Crushing, Grinding and Elevating Machinery.

at once by the officers of the company. The improvements will include further and additional facilities for handling brick in increased quantities. The two plants of the Gulf States Brick Company turn out a product of from 25,000,000 to 30,000,000 brick annually, and the increased facilities will enable the company to make 40,000,000 brick per annum if required. Down draught kilns for faced brick will also be installed as well as additional Dry Press machines.

The business of the company for the past year was reviewed and pronounced extremely satisfactory and the company will expend large sums in making the contemplated improvements.

Messrs. Loeb and Feibelman, after attending the meeting, returned to their homes in New Orleans.

CLAY RECORD.

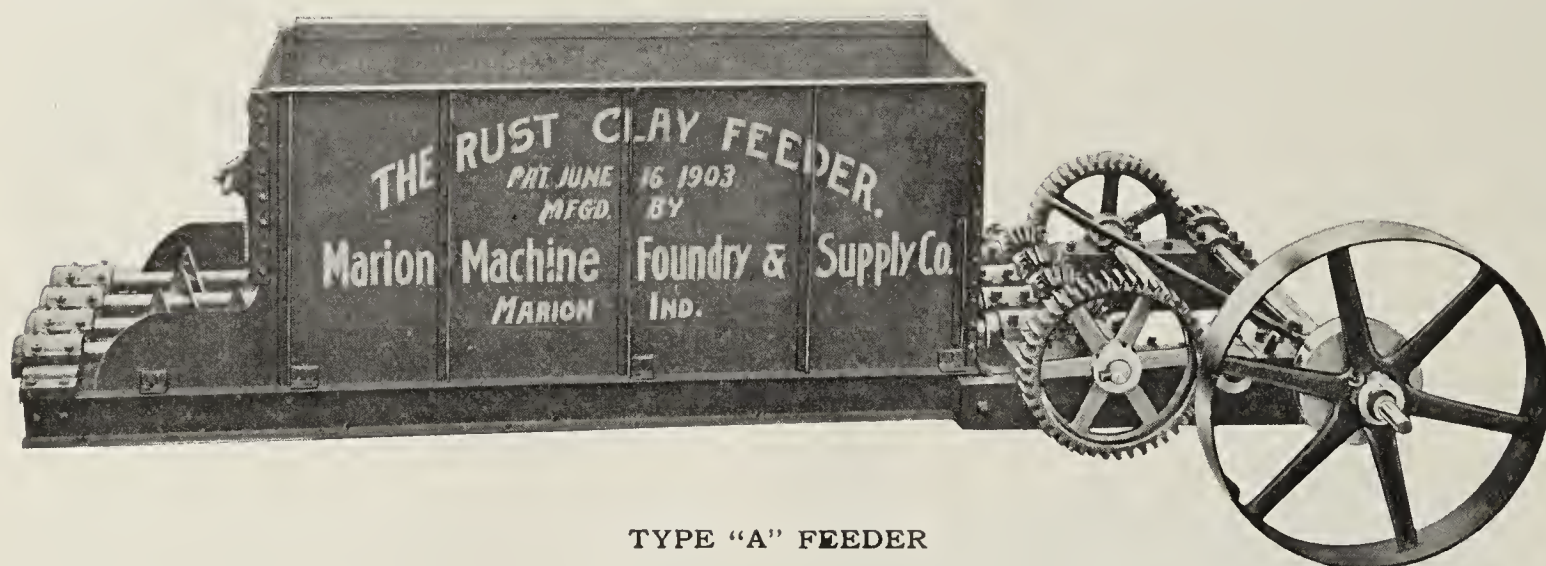
THE RUST CLAY FEEDER AND MIXER

The Rust Clay Feeder has been brought out in response to the demand for a better method for mixing and feeding clay, in brick and tile factories, and all clay working plants. It has been in successful operation for five years. The saving in labor, increase in production, and improvement in product which it effects, makes it a necessity to the up-to-date clay worker.

The principal advantage is that it is saving in labor. By its use, the time of one to two men is entirely dispensed with. The clay, being dumped into the hopper of the machine from the car, is automatically fed into the disintegrator.

The operation of the machine is automatic. The construction of the hopper is such that the clay does not clog up, and feeds down on the spirals by its own weight. The machine requires no attention after the feed to the disintegrator has once been regulated. The spirals are nine inches in diameter. The diameter of the main driving pulley is forty inches. R. P. M. 70. The body is constructed of 6-inch channel irons, and the hopper of heavy sheet iron, reinforced with angle iron at top. The spirals are made in one solid piece, and rigidly fastened to the shaft by a patented process.

The Rust Clay Feeder dispenses with the men ordinarily



TYPE "A" FEEDER

The clay is tempered, the spirals (see cut with top off) draw their supply evenly from all parts of the hopper, mixing the clay perfectly.

The feed is regular, preventing the choking and consequent wear and tear on the disintegrator, a vast improvement over the irregular feeding by hand. The perfectly regulated feed, given by this machine naturally tends to improve and increase the output of the plant.

The feed may be varied in amount, at will, by raising or lowering the front of the hopper or by increasing the speed.

used to feed the clay into the disintegrator. This saves the time of from one to two men, who will draw from \$1.50 to \$4.00 per day, according to the local rate and amount of work. The average saving will be about \$2.25 per day. Counting 250 working days in the year, this means a saving of \$562.50 where one of these machines is used, a return of over 100 per cent on the investment. Not bringing into account the great value in tempering the clay, and the regular feeds on the machinery, thereby saving repair bills and costly delays.



TYPE "A" FEEDER WITH BOX REMOVED

It requires little power as it is back-gearred, the spirals running at very slow speed. The average machine does not use over two horse power, and this power is saved in the other machines because of the regular feed, so that total load on the engine is really not increased.

The machine is built of the very best material for the purpose required, and all parts are more than strong enough to resist any strain that may come upon them.

This machine is constructed to feed direct into the disintegrator, but where it is desired to convey the clay off to one side, we manufacture a cross spiral attachment, which is attached to the end of machine and is operated by means of pulleys and belt.

Every machine is fitted with a friction clutch pulley, and is thoroughly tested before being crated for shipment.

As will be seen from the following cuts, we manufacture

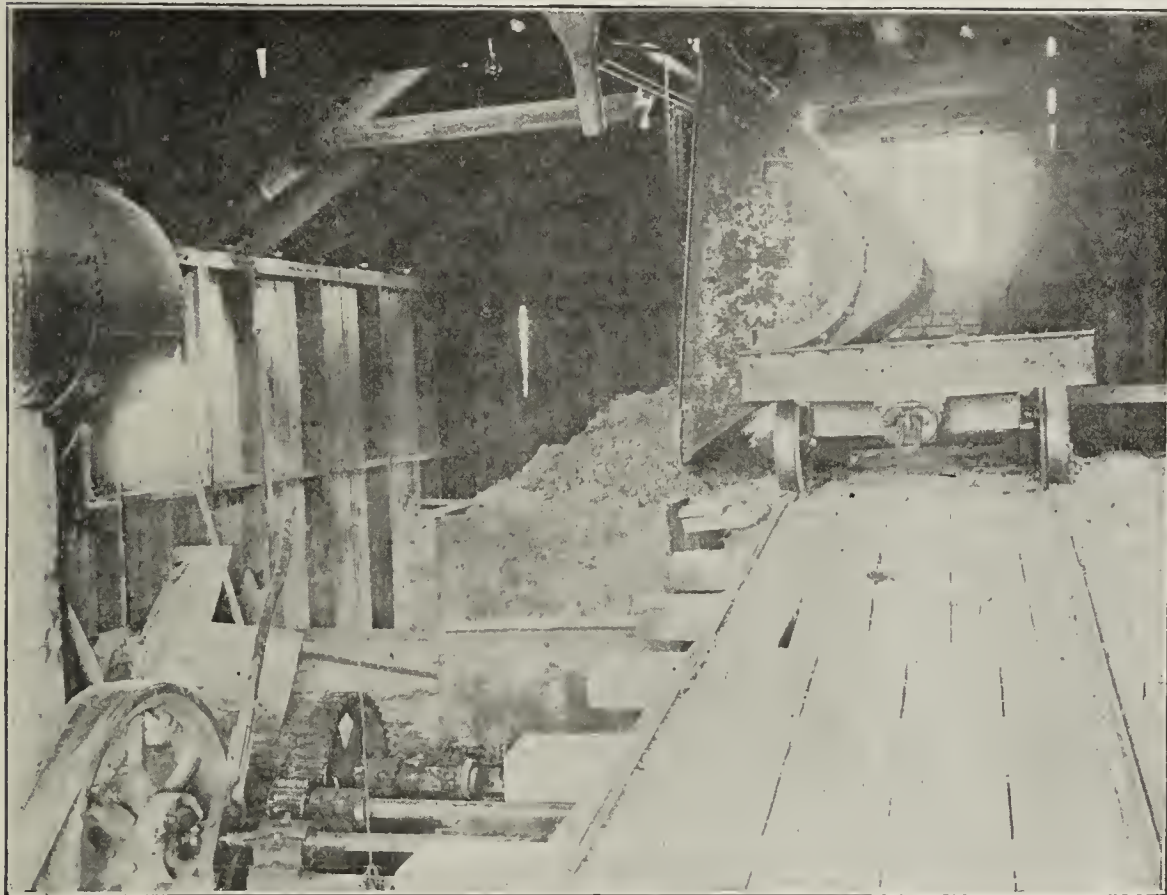
different types of drives to suit conditions in different factories.

The manufacturer of this machine placed it on the market about 18 months ago and they have placed them in a large number of factories in the United States, Canada and have even shipped them to New Zealand. Every machine without one exception has given satisfaction.

The company has been forced to double the capacity of their shop and are now erecting as fine a foundry as in the state of Indiana. A contract has also been closed with a New York house to handle the foreign sales.

Bauxite in the form of bricks has proved to be of great value as a refractory material for lining basic open-hearth steel furnaces and lead-refining furnaces, being superior to fire brick for these uses.

As an ore of aluminum bauxite is still in great demand. The production of aluminum has increased in twenty years from 18,000 pounds to nearly 15,000,000 pounds annually, its production in 1906 having been 14,910,000 pounds. This increase in production was accompanied by a decrease in price from \$15 to 37 cents per pound. The application of the metal to new uses from time to time and its increased



VIEWS OF THE RUST CLAY FEEDER IN OPERATION
IN BRICK PLANTS

From the tone of the testimonials in their latest catalogue it surely looks to be one of the best feeders that has ever been offered to the clayworkers and the machine now has stood every test and proved to be satisfactory.

The Marion Machine, Foundry & Supply Co. of Marion, Indiana can give you all the information you wish further on clay feeders.

PRODUCTION OF BAUXITE AND ALUMINUM IN 1906

The production of bauxite in the United States in 1906 amounted to 75,332 long tons, valued at \$368,311. Compared with the production in 1905, 48,129 long tons, valued at \$240,292, the production in 1906 has increased 27,203 tons—nearly 57 per cent—while the average price per ton remains almost the same. Arkansas still leads in production, the other producing States being Georgia and Alabama.

The use of low-grade bauxite for the manufacture of refractory brick and the prospective new developments in the aluminum industry have stimulated interest in deposits of bauxite. In Tennessee developments have already begun on deposits at Missionary Ridge and at East Lake and Sherman Heights, suburbs of Chattanooga. Bauxite has been noted in California and also in Kentucky.



employment in old ways has caused a constant demand for it, which has not been fully supplied.

Recent plans of the Aluminum Company of America, formerly the Pittsburg Reduction Company, contemplate the erection of a model factory town, comprising 200 new houses, for the employees at its factories at Massena, N. Y., and a mill for rolling aluminum sheets at its New Kensington, Pa., plant.

Projects are under way which, if realized, will place in the field several competitors for the aluminum trade. One of these projects, it is reported, will be located on Cumberland River, about 25 miles below Williamsburg, Ky., where the river falls about 65 feet. The enterprise involves the construction of a dam which will provide 20,000 horsepower at any season of the year.

An advance chapter from "Mineral Resources of the United States, Calendar Year 1906," on the production of bauxite and aluminum in 1906, by E. F. Burchard, is now ready for distribution. The pamphlet comprises a note on aluminum salts, including alum and aluminum sulphate, with descriptions of undeveloped deposits of these salts in Nevada and New Mexico.

SHOULD ROOF TILES BE GLAZED?

The added beauty of glazed roofing tiles for certain classes of building opens up a question of great technical interest, quite apart from the artistic side of the matter. It is well known that many glazes are far from durable when exposed to the exigences of the climate, but even if a perfectly durable glaze—one which would not craze or shell after several years exposure could be used, would it be desirable to apply such a glaze to the majority of roof tiles or not?

A well-known Continental tile manufacturer, who has studied the question most carefully, has come to the conclusion that glazed roofing tiles are a delusion and a snare, and that their beauty is only obtained at the sacrifice of durability in countries where the tiles are subjected to repeated frosts.

In lecturing before the German tile makers recently Herr Hielscher pointed out that the porosity of tiles by different makers, even when obtained from the same yard, often differed considerably. Some tiles are exceedingly porous, whilst others are partially vitrified, and can absorb little or no water.

The average tile is distinctly porous, but, provided that it is not open enough to be penetrated by a series of heavy shows this is no objection. Porosity alone is no hindrance to durability, as many of the oldest tiles known are exceedingly porous.

The reason that porous roofing tiles are regarded with suspicion in some quarters is that there is a difference in durability dependent upon the size of the pores and the relative thickness of clay around them. Thus if the pores are very large and the clay between is very thin, the latter will not be able to resist the pressure of the expansion when water in the tiles is converted into ice, and damage will be done. If the air spaces are more evenly distributed and smaller, a satisfactory tile may be produced which has, at the same time, a high degree of porosity.

SOME ADVANTAGES

It is commonly argued that a coating of glaze on a roofing tile will prevent any water from soaking into it, and thereby prevent any action of frost on the tile, no matter how porous the latter may be. To a large extent this is true, and fully so as regards the effect of water on the outside of the roof, but is it equally true of water which gains access to the tiles from inside the building?

Provided the glaze is a suitable one to withstand the variations in temperature and other climatic conditions, it is quite certain that much of the water generally absorbed by roofing tiles cannot be held by those which have been glazed. But the question comes—is this the most important part of the water when regarding the tiles from a durability standpoint in frosty weather?

—AND DISADVANTAGES

In every building a certain amount of water vapour is always present, and can be seen in a condensed form on the inside of the windows, and occasionally on the walls in cold weather. Water vapour, being lighter than air, has a strong tendency to gather in the upper parts of the build-

ing—near the roof—and the largest amount of condensation therefore takes place in the tiles. The difference is that the porous tiles absorb this water so that in the ordinary way it is not noticed, as is the water condensing on the non-porous walls of window panes.

Another difference also occurs in that when windows are opened the condensed water again evaporates and disappears, but with a glazed tile roof this evaporation cannot take place to any appreciable extent, and consequently remains within the tile long after the cold weather which caused its production has gone. Consequently, the amount of water accumulating in the pores of the tiles increases until they hold no more, and the action of the frost is as strong or stronger than if the tiles were porous.

A COMPARISON

If a short piece of glass tube, about one-eighth of an inch internal diameter, be held vertically, and its lower end immersed in water, the upper end being then closed with a finger, the tube may be lifted out and carried about the room without any danger of the water flowing out of the tube, in spite of its vertical position. The reason is that the pressure of the air outside the tube is greater than that within it, and consequently the water remains in the tube. If the finger is removed the balance of pressure is destroyed and the water runs out.

If a smaller tube—say one-twentieth of an inch in diameter—were used, there would be no need to place one finger on the upper end, as the attraction between the water and the glass would be great enough to keep the water in the tube. This action also takes place in roofing tiles.

The result of these combined actions is that the water remains in the tiles and cannot be evaporated from above because of the coating of glaze; it cannot escape from below because of air pressure. Consequently it is fully exposed to the frost, just as much as if no glaze were present.

The only way in which to prevent this troublesome condensation from occurring is for the tiler to so lay the tiles that they admit of sufficient ventilation and air circulation, without at the same time having sufficient space between the joints for rain to leak or be blown in. By this means the water vapour may escape without accumulating in the roof, and much of the difficulty may be prevented.

Above all must the tiler be warned against fixing the tiles with cement-mortar, as this prevents their legitimate expansion and contraction with varying temperatures, and is a frequent cause of broken tiles, especially when these are of the interlocking kind. If such tiles are too twisted to allow of their being fixed without the assistance of some filling material, then a lean hair-lime-sand mortar should be employed, but never cement.

Some architects specify glazed roofing tiles for window sills and other parts of buildings, where they are laid directly on or at the side of ordinary brickwork. When this is done they should be warned that no tiles will stand long under such conditions unless they are completely vitrified throughout, and not merely surface glazed.

The moisture in the surrounding brickwork is bound to enter into the porous backing of the tiles, and, being unable to evaporate (on account of the glazed surface) it remains there, and the tiles are split after a few frosts. Such tiles must, if glazed, be protected by means of a waterproof backing and side pieces, or an air space must be left all round the tiles.

With the precautions indicated, glazed roofing tiles may be used with success and satisfaction; without them they will inevitably be disappointing failures. As much depends on the tiler, it is to the interest of the tile maker to see that this man knows what to do and what to avoid.

POTTERY OUTLOOK GOOD; PRICES SHOULD BE FIRM

East Liverpool, Ohio, Nov. 8.—With potteries of the United States running full time, with collections showing a marked improvement, holiday order brisk, the condition of the pottery trade of the country today is in better shape than for many years. The Ohio Valley is filled with brick, sewer pipe and tile factories and all of these firms are handling all the business possible. The year of 1907 will close as being one of the most remarkable in the clay industry.

So far as pottery is concerned, it is conceded on every side that prices should be more firm. It is apparent to all that no trouble is encountered to secure business. Manufacturers have been rushed with orders since the end of the early spring trade, and this condition will, most certainly, continue until the end of the year.

While there has been some very slight labor disturbances in the western pottery district this year, they have been of no consequence to the manufacturers. Kilnmen, just a few of this branch of the trade, struck because of a slight difference with the manufacturers, and this, happily, is all that occurred to mar an otherwise peaceable employment.

The shortage of small help in the potteries has been felt in the West more than in the East. In the summer season there is no lack of this sort of help, but as soon as the schools open, the Ohio child labor laws are such that factories, generally speaking, are almost drained for small help. It is becoming more noticeable every year, the tendency of the American youth to seek a higher education. It is a fact that today the child of 14 only goes to work when there is absolute need of the wage he earns by those at home. Manufacturers are close to observe these conditions, and while applauding inwardly the purpose of the youth, yet the potteries are not today employing the number of small help that is generally required.

A marked feature of the American pottery trade this year has been the effort of the manufacturer to make a higher grade of ware. The market for specialties is growing, and the pottery manufacturer has been quick to grasp this opening for trade. The class of decoration of American-made pottery is constantly advancing. The body of the ware is undergoing a change, which improvement is very noticeable. That the American pottery manufacturer will be making as high a grade of ware as the imported article at an early date there is no room to doubt. Everything is working with this end in view.

Many potteries in the West have been compelled to increase their capacity in order to care for increased business during the year. Although one pottery manufacturer in this district is producing more ware than the combined output of six 10-kiln plants, yet other manufacturers are enjoying a big trade.

Some important discussions are expected to take place at the annual meeting of the United States Potter's Association, which will be held at the Hotel Raleigh, at Washington, D. C., early in December. A meeting of the executive committee will be held soon for the purpose of deciding upon a date. Mr. James Pass of Syracuse, N. Y., is president of the association, while Mr. George C. Thompson of this

city is vice-president. It is believed in the West that Mr. Thompson will be advanced to the presidency at the Washington meeting.

A belated season held back the paving brick trade throughout the Ohio Valley. While factories have been quite busy, it is related that more early selling would have resulted *McClurg & Co.*

had not the weathers held up municipal improvements. Throughout the summer, however, all plants were active. The demand for brick for paving purposes continues good even at this date. Work is now being completed which municipal bodies ordered early in the summer, and many contracts will go over for another month.

With the manufacture of sewer pipe, conditions are somewhat similar. Business has been good all year. The American Sewer Pipe Co. placed a new plant in operation in this city, while down the Ohio Valley manufacturers have been compelled to increase their kiln capacity. Extensive improvements looking forward to the doubling of the capacity of the plant of the East Ohio Sewer Pipe Co., at Irondale, O., are also under serious consideration. Work, however, will not start on this change until after the end of the year.

Tile manufacture is also being introduced in the Ohio Valley, and the first plant started this year has been compelled to double its capacity. This plant is devoted exclusively to the making of floor tiles.

Electric porcelain manufacturing is fast taking a hold in the West, and at no distant date East Liverpool will take the lead over Trenton, N. J., in the manufacture of this class of goods. The electric porcelain business is growing at a most remarkable rate and so great is the field that another plant is being erected in this city. Three years ago there were only two plants in the West engaged in the making of electric porcelain goods. Today there is nearly a dozen, and others building.

As most all of this production is used in electrical work it can be readily seen just how extensive the field really is.

AMERICAN SEWER PIPE CO. IS RETIRING STOCK

Stockholders of the American Sewer Pipe company were down the new rates. It is expected these rates will be a great notified November 4 that a special meeting will be held in Jersey City, November 20, to consider a proposition to retire \$1,000,000 of the capital stock. The capitalization of the company is now \$8,000,000. There is a large number of stockholders of the company in Akron. The general offices are in Pittsburg, Pa., and the charter office is in New Jersey. Barberton and Akron each contain a plant, and George Hill, vice president of the company, has his residence in Akron.

Recently the company began buying in its stock at \$20 a share, borrowing some of the money for the operation, says Intelligence from Pittsburg. When the money market tightened and funds became scarce the dividend was cut and the money saved from that source diverted into the stock market for the purchase of the shares at the low price fixed by the corporation.

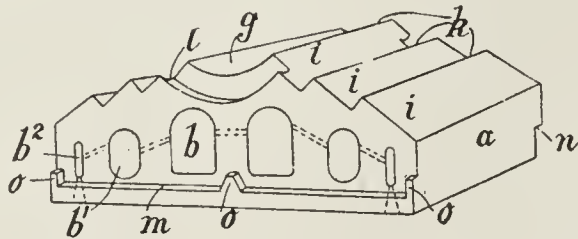
The American Sewer Pipe company is usually known as the Sewer Pipe Trust, and is said to have controlled the entire trade through a pool with smaller companies until this was dissolved by the action of the United States at Jamestown, N. Y.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

865,382. Invert or Block for Sewers and Pipes. Watkin Hall, Great Crosby, near Liverpool, England. Filed Feb. 26, 1906. Serial No. 303,097.

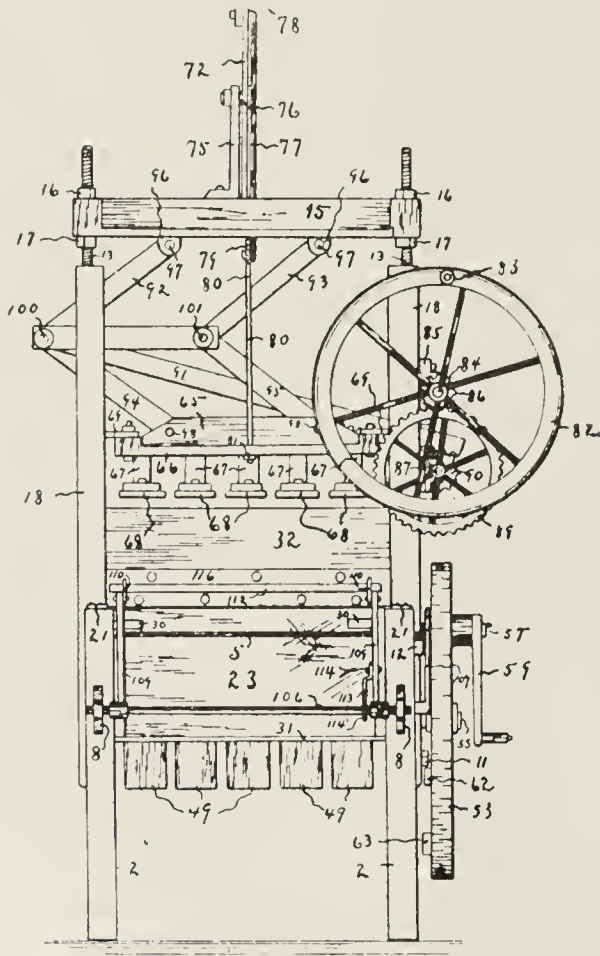
An invert or sole block having continuous land drainage channels the upper portions only of such channels being in communication with each other to allow said channels to act as settling chambers, there being water entrance openings extending downward from certain of the channels to the base of the invert.



The combination with inverts or blocks for pipes made with channels in the base, and perforations for admitting land water into said channels, of a bed or foundation for the block, consisting of a framework made of longitudinal bars and cross-pieces with a filling of cement, said framework being so made as to keep the cement away from the said perforations, and a filing of rubble at each side of the said framework.

866,175. Cement-Brick-Pressing Machine. Philip K. Young, Omaha, Nebr. Filed Aug. 21, 1906. Serial No. 331,436.

In combination, a machine as described, comprising a frame; a horizontal shaft in suitable bearings upon the frame; a first stop-lug upon the frame; a second stop-lug upon the frame; a balance wheel secured upon said horizontal shaft and having thereon a first engaging-head and a

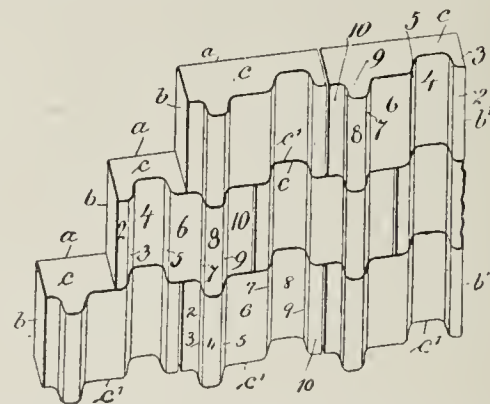


second engaging-head; a series of stationary, vertically-disposed molds upon the frame and provided with upper, open end-portions; a series of upper dies disposed in alinement with and having means for movement within a part of the upper, open end-portions of said stationary, vertically-disposed molds; a series of lower dies; one of each of the

dies of the lower series seated within each of said stationary, vertically-disposed molds and having a rack formed upon its outer edge; pinions upon said horizontal shaft in engagement with the racks upon said dies of said lower series of dies; means to produce a rotative movement of said balance wheel to cause engagement of said first engaging-head with said first stop-lug, and means to produce a reserve rotative movement of said balance wheel to cause engagement of said second engaging-head with said second stop-lug.

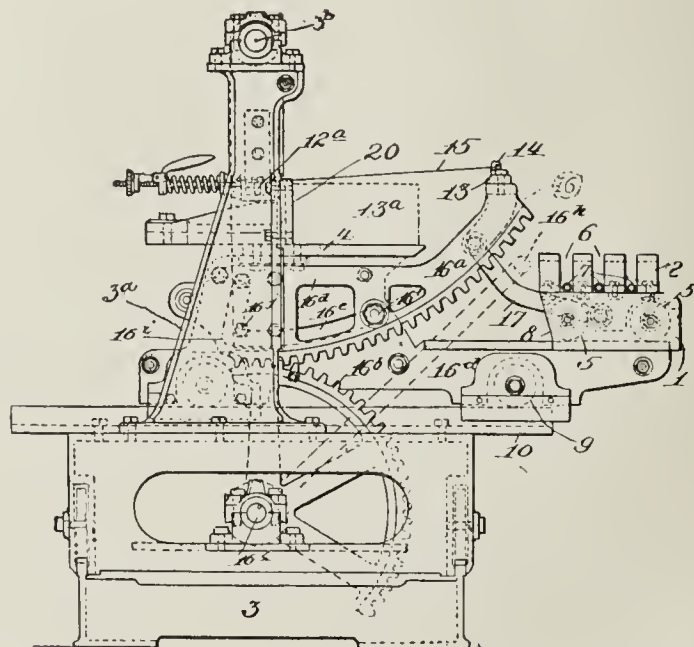
866,360. Concrete Block. Isaac B. Hill, Plainfield, N. J. Filed Apr. 25, 1907. Serial No. 370,124.

A series of similar concrete blocks forming the outer surface of a wall and a series of similar blocks in a reversed position forming the inner surface of a wall, each block having an outer plain face, plain end faces and plain top and bottom faces and a face opposite to the outer plain



face of irregular surface, in which there are three surfaces in the same plane and in a plane parallel to the outer plain surfaces, three surfaces at one end that form a recess toward the outer plain surface and three surfaces at the other end to extend away from or form a projection from the outer plain surface with the blocks of the superimposed layers reversed with reference to one another and with broken joints, and the blocks of each horizontally disposed layer reversed in position and spaced apart so that between said blocks a tortuous or zig-zag passageway is formed which is vertically disposed and continuous as a dead-air space for the height and length of the wall.

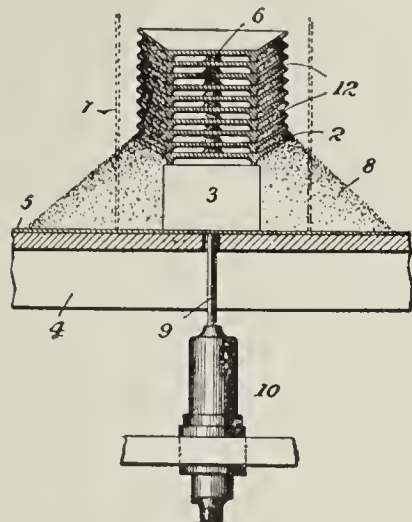
867,149. Brick-Cutting Machinery. Andrew Ramsay, Mount Savage, Md. Filed Mar. 24, 1905.



In brick-cutting machinery, a cutting table, a reciprocating support arranged in operative relation with respect to said table and having that end opposed to the cutting table formed at an inclination, a cutting means interposed between the cutting table and the said support, a pallet-holder carried by said support, a pallet mounted in said holder and arranged below the upper surface thereof, operating means for said cutting means, and an operative connection between said cutting means and said support for moving the support during a part of the operation of said cutting means.

868,106. Bedding Ceramic Ware for Firing. Ernest Mayer, Beaver Falls, Pa., assignor of one-half to Joseph Mayer, Beaver Falls, Pa. Filed Jan. 4, 1907. Serial No. 350,811.

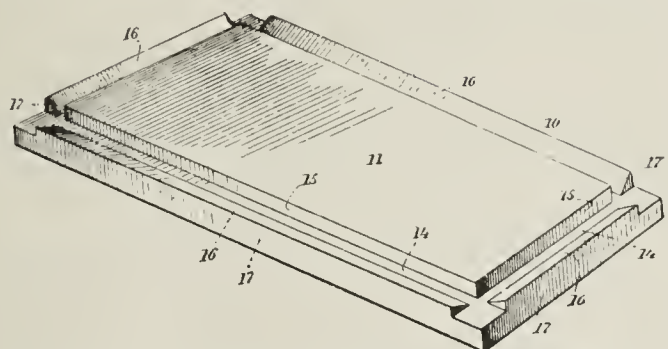
The process of bedding ware for firing, consisting in confining a body of suitable bedding material about and between the articles of ware, and then agitating the articles and bedding to effect even distribution of the bedding, and removing the bedding material which is outside of the said articles.



The process of bedding ware for firing, consisting in confining a body of suitable bedding material within a shell and about and between the articles of ware, then agitating the articles and bedding to effect even distribution of the bedding, then removing the shell and surplus bedding material, and burning the ware within a saggar in the kiln.

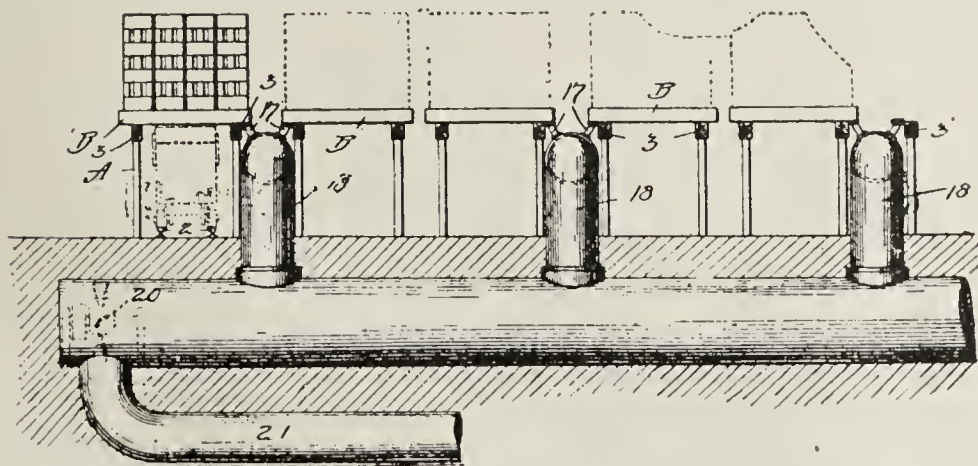
866,755. Tiling. Joseph M. Wells, Newark, N. J., assignor of one-half to Frank L. Davis, Chicago, Ill. Filed July 3, 1907. Serial No. 381,979.

A tile having along the edges of its inner face grooves to receive cement, said grooves having substantially vertical inner walls and outwardly inclined outer walls; substantially as set forth.



A tile having on its inner face an encompassing edge groove defining an inner panel and whose outer walls cooperate with the edge walls of the tile to form edge flanges 17 at the ends and sides of the tile; substantially as set forth.

867,872. Apparatus for Drying Brick. John C. Boss, Elkhart, Ind. Filed Sept. 28, 1906. Serial No. 336,621.

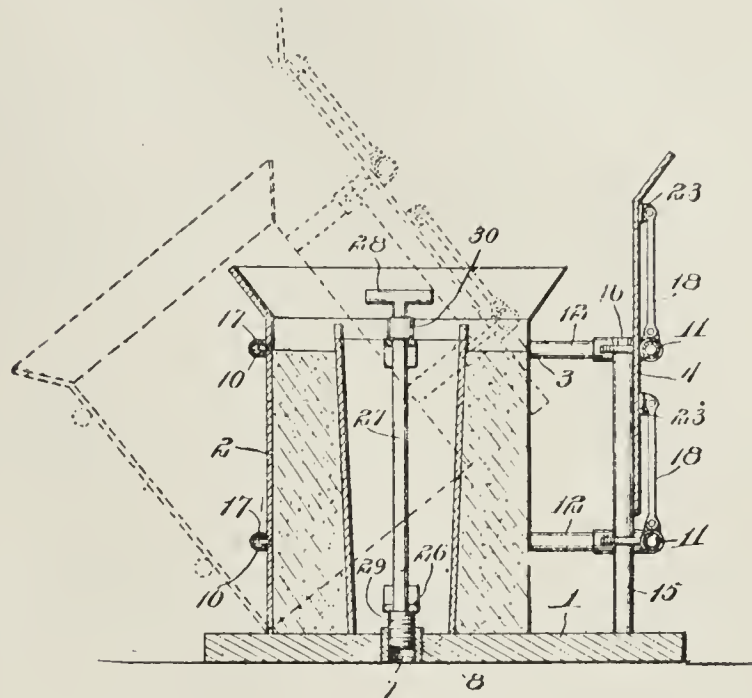


In a brick drying apparatus a trunk for conveying the air-supply, a series of pallets for supporting the bricks, said pallets having openings for the passage of air to the bricks placed thereon, supports for the pallets arranged to permit the ends of the pallets to project over said supports, and

means for detachably connecting said projecting ends of the pallets with the air trunk, substantially as described.

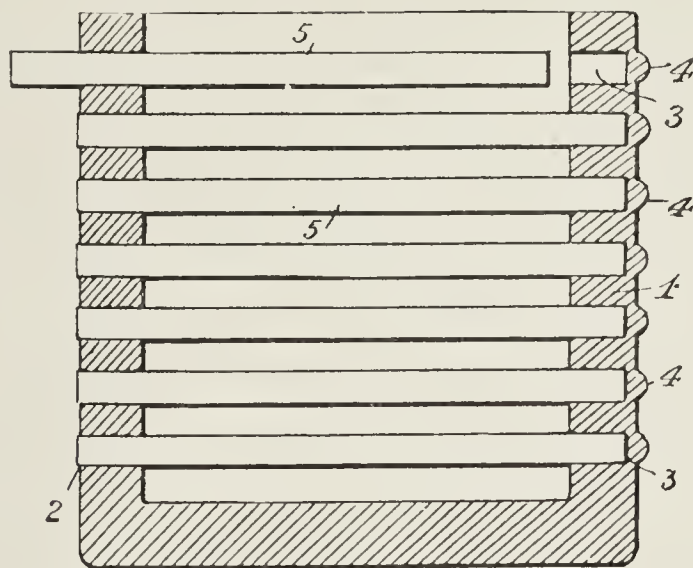
In a brick drying apparatus, a pallet having an air chamber with discharge openings, supports adapted to receive the ends of the pallet, a track for the pallet conveying truck between the pallet supports, an air supply pipe by the side of the support, and detachable connections between the air supply and the pallet chamber, and an automatic valve in said connections, substantially as described.

867,129. Mold. William L. Hart and Frank J. Daniels, Olney, Ill.; said Hart assignor to Charles C. Daniels, Olney. Filed Dec. 1, 1906. Serial No. 345,904.



In a device of the class described, a frame, a mold disposed therein comprising side and end walls, one of said walls being fixed to the frame and the others movably arranged therein, a pallet on which the mold rests, and means connecting the movable walls to the frame for upward and outward swinging movement to inactive position, the mold being adapted after the movable walls have been moved to inactive position, to tip bodily forward for discharging the block.

866,060. Saggar for Threading Tiles, &c. Thomas Pratt, Beaver Falls, Pa. Filed Oct. 18, 1906. Serial No. 339,545.



A device of the character described, consisting of a receptacle having tiers or rows of apertures in one wall thereof and corresponding tiers or rows of recesses in its opposite wall, said latter wall having formed therewith outstanding boss-like portions forming closures or walls for the corresponding or outer ends of said recesses, and rod or bar supports insertible through said apertures and with their rear ends lodged in said recess and limited in their insertion by, and resting against said end walls of said recesses.

CLAY RECORD.

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No. 9

"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual-convention of the Iowa Brick
and Tile Association will be held at Des Moines, Iowa,
January 22 and 23, 1908.

The fifth annual convention of the Canadian Clay Products
Manufacturers will be held at Ottawa, Canada, November
19, 20 and 21, 1907.

The fourth annual convention of the National Association
of Manufacturers of Sand-Lime Products will be held at
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-
ciety will be held at Columbus, Ohio, February 3d and
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving
Brick Manufacturers' Association will be held at Columbus,
Ohio, February 3d and 4th 1908. Headquarters at the
Southern Hotel.

The twenty-second annual convention of the National Brick
Manufacturers' Association will be held at Columbus, Ohio,
February 3d to 8th 1908. Headquarters at the Southern
Hotel.

The thirtieth annual convention of the Illinois Clay
Workers' Association will be held at Peoria, Ills., Jan. 14-15
and 16th 1908. Headquarters at the National Hotel.

Subscribe for the Clay Record today.

Sand is one of the important ingredients in the elixir of
success.

One of the ambitions of the average man is to do those
he has been done by.

A long face gathers few friends. Put on a glad face and
keep it so by reading the Clay Record.

Be at peace with your neighbor even if it means war with
yourself. Don't soak him whenever the opportunity offers

It isn't because they are looking for an excuse to ap-
plaud that the neighbors are induced to keep an eye upon
you.

Get on the other side of the street when you see a man
approaching who never fails to inform you that the world
is daily growing worse.

Prosperity has much the same effect on a man as gas
has on a balloon; too much of it will result in an explosion.
Always keep track of the sand bags.

BUILDING OPERATIONS FOR OCTOBER

Although building and construction throughout the United
States has been exceedingly brisk during several years past,
and has set a very high record, this volume is nearly main-
tained at present, as indicated by a comparison of the past
month with October, 1906. Official building reports from
some fifty leading cities throughout the country received by
The American Contractor, Chicago, compiled and tabulated,
show that building operations continue decidedly active;
twenty-nine cities show an increase varying from one to two
hundred and ninety per cent, and twenty-two show a loss
ranging from three to fifty-nine per cent; in the aggregate
the decrease, as compared with October, 1906, amounts to
three and four-fifths per cent. Some of the principal gains
are: Birmingham, 97 per cent; Buffalo, 27; Cleveland, 290;
Grand Rapids, 35; Kansas City, 25; Little Rock, 113; Min-
neapolis, 12; Nashville, 116, New Orleans, 29; Omaha, 36;
Paterson, 134; St. Paul, 77; Spokane, 81; Syracuse, 140;
Worcester, 127; Wilkes-Barre, 86. Among those showing
a decrease are: Baltimore, 34; Bridgeport, 18; Chattanooga,
50; Detroit, 20; Duluth, 33; Hartford, 43; Los Angeles, 44;
Newark, 26; Philadelphia, 59; Pittsburg, 36; Tacoma, 23;
St. Louis, 54. Building operations have been exceptionally
lively in St. Louis since the great exposition there, and this
setback was to be expected.

OBITUARY

James Ball one of the leading citizens of Clinton, Ills., and a pioneer died at his home of pneumonia. He was 74 years of age and was a manufacturer of brick.

J. G. Low, of Chelsea, Mass., died in a private hospital at Cambridge, after an illness of several weeks. He with his father, was the founder of the Low Art Tile Co., and was the originator of the tile soda fountain.

David McKelvey, for 32 years alderman of the second ward at Alleghany, Pa., died at the German Hospital of acute indigestion. For a time he was a well known brick maker and conducted the only brick works north of the Alleghany river in Pennsylvania.

FIRE! FIRE! FIRE!

T. L. Kennedy, president; R. R. Hice, secretary and treasurer, and W. J. Stewart, manager.

Flames destroyed the lime kiln in the brick yard of Webster & Co., 3rd and Reed streets, Philadelphia, Pa. The prompt work of the watchman prevented a serious blaze.

A fire destroyed one of the kilns of the Baltimore (Ind.) Vitrified Brick Co., at Westport. The fire was extinguished by the employees before it got a good start.

The stock shed at the Fallston (Pa.) Fire Clay Co.'s plant on Brady's run which contained straw and a quantity of brick ready for shipment was destroyed by fire causing a loss of \$3,000, with no insurance. The officers are Hon.

DON'T LET FEAR RUIN BUSINESS

Of what earthly use is a soldier who drops his musket and takes to his heels at the first onslaught of the enemy? Where would a nation end with an army of such soldiers? Where a business?

At present this country stands face to face with a most absurd enemy, who came like a bolt from a clear sky and wholly without cause.

That enemy is Fear.

Are you a good fighter or are you a coward? Are you going to lay down arms before this imaginary fictitious apparition, or are you going to "march breast forward" and help break down this fear in the minds of your customers?

There is no reason why merchants or anyone else should be alarmed. The backbone and foundation of this nation is its integrity and natural resources, which are in most superb condition. In fact, the land "flows with milk and honey." The only trouble is the people (some of them) are scared stiff. And about what? Absolutely nothing. Its just like a cry of fire in an opera house where no fire exists.

Fear is no person, place, nor thing. It has no actual cause—no real power. In the presence or confidence it becomes absolute nothingness and vanishes as darkness before the light.

When a snag is blown out of a river by dynamite the noise creates excitement, but the snag being removed leaves the river clear.

Several snags are being removed from the "financial river," but the explosion should cause no alarm. With the snags removed this country's prosperity will flow on greater and more powerful than ever.

ACCIDENTS, DAMAGES AND LOSSES

The Globe Pottery Co., which took over the business of the Ironsides Pottery Co., Bordentown, N. J., has been placed into the hands of Receiver Charles B. Case.

William Lahey, the well known and wealthy brick manufacturer is critically ill at his home in New Windsor, N. Y. He sustained a stroke of apoplexy.

Peter Marks, an employe of the Chicago Retort & Fire Brick Co., at Ottawa, Ill., was badly injured at the works so he is now in the Ryburn Hospital.

Albert Goller was awarded a judgment of \$2,000 against the South Bend (Ind.) Brick Co., for the falling of a shed upon him.

M. J. Siesmore, an employe of the Altoona (Kansas) Brick Co., sustained a severe injury in the shale pit by a huge boulder falling upon him after a blast had been made.

A New York firm of expert accountants has sued the U. S. Brick Co., Reading, Pa., for \$1,250 alleged to be due for services.

W. L. Davis of Berlin, Ct., has been sued and attached on four accounts for material and labor used at his brick works. The amounts aggregate \$7,000.

R. G. Eiesenhart of Horseheads, N. Y., seriously injured his spine by falling from a wagon while directing work.

Supt. Frank Whiting of the Streator (Ills.) Paving Brick Co., was seriously hurt by being squeezed between the hole in the machine room and a loaded shale car.

Vasil Strasinsky lost part of his hand in a brick machine at the Robinson Clay Products Co., Akron, Ohio, and asks damages to the mount of \$10,000 for same.

At the request of the Stevenson Co., Wellsville, Ohio, the Ceramic Brick Co., East Liverpool, Ohio was placed in the hands of receiver J. J. Martin. The claim is for \$1,058.65.

Henry Martin, an employee of the Phoenix Brick & Construction Co., St. Joseph, Mo., is suing the company for \$5,000 damages for being injured by the falling onto him of green brick that were in a kiln.

Jacob Shuck, foreman of the Chesapeake Brick Co., Baltimore, Md., threw a brick at his brother-in-law, Charles E. Lilly because he had goaded him beyond endurance. The brick striking him in the head and killing him.

IOWA BRICKMAKERS WINNING RATE FIGHT

Brick manufacturers have scored a victory over the railroads in Iowa at the rate hearing before the railroad commissioners. The railroad men have admitted that the rate in Iowa was in excess of what it should be when compared to the interstate rate and a reduction will follow.

It was shown that the Iowa brick makers, particularly those in and near Des Moines, did not have as good a rate as the Galesburg, Ill., manufacturers.

Des Moines shippers and Commissioner Wiley were pleased with the showing made and the attitude of the officials of the railroads to accede to the demand for a readjustment.

The commissioners took the different rates and arguments under advisement and will shortly make a ruling laying advantage to Des Moines manufacturers and shippers.

DR. FLOWER'S GREAT MYSTERIOUS, PERSIAN BRICK SECRET IS OUT

Flower's "great Persian secret" for brickmaking is out. It is free for all.

Thousands have been made through it by Dr. R. C. Flower, who solemnly declares it was revealed to him in the land of the Shah, where it is believed by some to have been discovered by one Ali Babi, who had a method of separating people from their money ages ago.

Dr. Charles B. Dotterer, president of the Virginia Clay and Material Company, a Flower concern, formed ostensibly to make "Persian secret" brick, gave out the formula yesterday, lest it should lead to a repetition of transactions which helped to make the promoter famous in New York and elsewhere.

One of the conditions on which Dr. Dotterer accepted the presidency of the company was that he should hold the secret.

In consequence of that agreement Dr. Flower gave him the formula for the "great Persian secret" in his own handwriting. It is reproduced in The North American today.

President Dotterer does not wish his motive in disclosing the alleged secret to be misconstrued. He declares he was actuated only by the highest intentions. He believes that the investors in the stock of the "great Persian secret" brick-making scheme have been duped. Notwithstanding that on last Thursday he ordered that no more stock should be sold, he learned yesterday that Flower was still at work trying to sell it.

President Dotterer then concluded to give out the alleged "secret" in the hope that it will effectually burst the bubble.

The formula was written in lead-pencil on the back of a stock subscription blank. Flower headed the formula with a physician's prescription mark, which raises the thought whether the promoter when he wrote it was thinking of compounding either a sleeping potion or a nerve tonic.

Equal parts of gypsum cement and granite cement combined form the basis of the "great Persian secret." The other ingredients are common table salt, saltpetre, boracic acid and borax. All of these mixed together in the given proportions make what Flower calls the secret process or binder. He declares that "even dust of the street when mixed with the 'secret' will make the best brick for the least money."

It may be noted that Flower spells gypsum with a. j. He also has given the quantities of the secret ingredients necessary to continue with a ton of sand and 300 pounds of clay. Here is the formula:

Sand	1 ton
Clay	300 pounds
Gypsum cement	250 pounds
Granite cement	250 pounds
Salt	3½ pounds
Saltpetre	8 oz.
Boracic acid	2 oz.
Borax	3 oz.

When Dr. R. C. Flower formed the Virginia Clay and Material Company he said, according to Dr. Dotterer, that

the parent company, known as the Tri-Color Brick Company, of New Jersey, would have to be paid \$35,000 in return for the new company using the "great secret." The money was to be paid to Dr. Flower in instalments.

This provision was subsequently incorporated in the agreement, and Dr. Fowler has been paid a large amount on account. No one connected with the Virginia Clay and Material Company seems to know anything further about the Tri-Color Brick Company than that Dr. Flower said it existed. Asked how the Tri-Color Company obtained possession of the "great Persian secret," Dr. Flower said that he had sold it to them. He emphatically declined to give any other information about the company.

President Dotterer and others connected with the Virginia Clay and Material Company do not believe that the so-called TriColor Company ever existed. Recent events which have thrown the light on Flower's stock manipulations incline them to believe that the Tri-Color Company was a deal of Flower's to start the ball rolling to gather money on the "great Persian secret" scheme.

Theodore C. Search, who has tried the "great secret," said that it will make a brick, but whether the brick is any good he does not know—Philadelphia North American, Nov. 4th.

VICTORY FOR HAVERSTRAW BRICKMAKERS

The first of nearly thirty suits involving claims for a large amount brought against brickmakers of Haverstraw, N. Y., ended before Supreme Court Justice Crane at Brooklyn, on Thursday, Oct. 24th, with a practical victory for the defense. The case was sent from Rockland county to Brooklyn on the allegation of the defendants that the prejudice against them was so strong that a fair trial could not be had in Rockland County.

The action tried was looked upon as a test case. It was brought by Jonathan Deyo and John M. Gardner, of New York, former Newburgh lawyers in behalf of Minnie Adlin, wife of Elimelich Adlin, her husband. Adlin was a rabbi, 24 years old, who was killed in the big slide of the clay banks at Haverstraw on the night of January 8, 1906. Mrs. Adlin as administratrix of her husband's estate sued to recover \$30,000. Mrs. Adlin also sued on behalf of her child, which was born four months after her husband had been engulfed in the disaster.

The action was entitled Adlin vs. the Excelsior Brick Co., of which Lucien Washburn is the president; Everett Fowler, general manager of company, James W. Gillies, who owned a yard adjoining the Excelsior plant and Nicholson & Riley, tenants.

The trial of the action occupied more than three days. The jury finally disagreed, the twelve men standing 8 to 4 in favor of the defendant.

Stephen C. Baldwin, of Brooklyn, appeared for the Excelsior Brick Co., Judge A. H. F. Seegar, of Orange County, for Mr. Gillies, Charles Morschauser, of Poughkeepsie, for Nicholson & Riley. Judge Seeger succeeded in getting the complaint against John W. Gillies dismissed.

The kilns at the Perrysville (Ohio) Pottery have been completed. They are 45 feet high and 21 feet in diameter.

A PARTIAL LIST OF SUBJECTS ON THE N. A. M. S. L. P. PROGRAM

The annual meeting of the National Association of Manufacturers of Sand-Lime Products will be held in the Chittenden Hotel at Columbus, Ohio, December 4, 5 and 6th, 1907. A part of the program is as follows:

The Power Plant.—T. M. Jackson, Saginaw, Mich.

Advanced Methods of Cost-Keeping.—John L. Jackson, Saginaw, Mich.

Steam, Gas and Electricity Compared for Power Purposes on Sand-Lime Plants.—W. J. Carmichael, Willoughby, O.

Mixing vs. Pressure in Securing Density.—P. L. Simpson, Chicago.

The Essential Conditions of Manufacture for the Production of a Uniform Sand-Lime Product.—J. Harry Allen, Winchester, Ky.

Sand-Lime Bi-Products.—Clark Mellen, Denver, Col.

The Manufacture of Lime and Its Preparation for Sand-Lime Brick Manufacture.—S. V. Peppel, Columbus.

A number of other interesting questions will be dealt with, which will be duly announced in the program.

ACTION TAKEN BY MANUFACTURERS AT EAST LIVERPOOL

East Liverpool, O.,—At a meeting of manufacturers of this city, it was decided that an offer would be made the workmen to pay them for their labor part cash and the balance in script, or all script, as the case might demand, this script, payable at a designated bank at an uncertain date, but as soon as the present stringency of the money market is relieved. The proposition was at once submitted to the employes of the Knowles, Taylor & Knowles pottery and the men decided to accept the offer and continue work. This script is merely a due bill payable at an uncertain date. The merchants have decided to take this in payment for goods and debts and the banks will receive it on deposit with the understanding that it is not subject to check until the signers of this script announce to the bank that they are ready to take up the same. It is following the course pursued in Pittsburgh and other eastern cities as a protection to banks and manufacturers. By this course the plants of the city will be kept running as heretofore, and business will remain undisturbed. It is the general opinion that present conditions will be of very short duration and the present precaution is taken to prevent financial disaster, on the recommendation of prominent financiers.

EX-PRESIDENT OF N. B. M. A. SERIOUSLY HURT

While superintending some work at his extensive brick manufacturing plant, R. G. Eisenhart, of Horseheads, N. Y., fell from a wagon on which he was standing, and seriously injured his spine. He is under the care of his physician, with a trained nurse in attendance and members of the family expressed the hope that the painful injuries are not so serious as at first feared.

The accident happened at about 4:30 o'clock, Nov. 2nd. Mr. Eisenhart had been directing some carting, and stood upon a platform wagon when the team started suddenly, throwing him to the ground. Employes of the yard ran to his assistance, and he was carried to his home as quickly as possible.

PORTLAND PLANTS HAVE HAD GREATEST YEAR IN THEIR WHOLE HISTORY

The score or more brick manufacturing plants in Portland, Oregon, and vicinity have with two or three exceptions closed down for the winter, after the most successful year's business in the history of brick making in the city. The daily output of the eighteen city yards is about 450,000 brick ranging in value from \$10 per thousand for the ordinary rough brick, to \$40 for the highest class of pressed finishing brick. There is about \$650,000 invested in the making of brick in Portland and vicinity, which estimate does not include the cost of the two cement brick plants, at St. Johns and Sellwood, both of which have been in successful operation during the past summer.

Nine-tenths of the brick made in this vicinity are the product of either the stiff mud wire cut machines or the soft mud high pressure machines.

The Newberg dry pressed plant has a daily capacity of 20,000 and the daily output of the Portland Brick & Tile dry pressed plant is 15,000. The product of these two plants is largely used for the outside finish of the larger business blocks.

The Western Clay Manufacturing Company uses a shale in the manufacture of brick, which is brought from North Yamhill, is ground to a fine powder and then put under a tremendous pressure. The handling of the product of the Portland brick yards has been very much simplified in the past year or two. Formerly a great deal of time and energy was wasted in hauling the brick of one yard to a job which was perhaps three or four miles from the yard, while there may have been a brick yard within half a mile of the place the brick were wanted. In other words it was no unusual thing for an east side yard to deliver brick to a building going up on the west side. Now, however, a great deal of this extra hauling is done away with by the establishment of a central agency by Nottingham & Co., who represent 12 of the largest yards, selling the combined product on commission. Under this arrangement, brick for the hundreds of buildings going up in all parts of the city are supplied where wanted from the yard nearest the job.

Brick manufacturers anticipate a good demand for their product during the coming building season. The large number of extensive buildings projected for next year together with those already contracted for practically insures another good year in the brick business in Portland.

NATIONAL GLASS BRICK COMPANY OFFICIALS SATISFIED WITH EXPERIMENTS MADE

It has been stated by a stockholder in the National Glass Brick Company, Connellsville, Pa., that the tests made of the brick manufactured near the proposed location of the brick plant near Trotter on the Johnston-Gallagher farm, were entirely satisfactory and that the company would immediately make preparations for the erection of a plant.

From an official source it was learned that the company proposes to erect seventy-five workmen's houses on the property and will let the contract as soon as contractors have finished their estimates upon the plans. The location for the houses is an ideal one. The company expects to get the plant in operation by spring.

BRICK LIFTING MACHINE INVENTED BY CAPT. ISRAEL THAT WILL REVOLU- TIONIZE BRICK TRANSPORTATION

Capt. William P. Israel of Portsmouth, N. H., has for four years been engaged in perfecting a brick lifting machine for loading and unloading barges. This machine has now been perfected and a machine built and ready for operation. With this machine two men can handle 25,000 to 30,000 per hour, either loading or unloading a vessel, doing the work of from fifteen to eighteen men. It does away with all breakage, thus making it safe to handle the finest of bricks, and also keeps accurate count of the number of bricks hoisted. It takes for a hoist 750 bricks, two hoists filling a New York cart.

By the use of this machine only one handling is necessary; the bricks being once piled at the kiln on a truck in 750 lots are run down to the vessel where the machine takes them up and sets them in the vessel. Upon arrival at the destination the machine takes up the bricks in 750 lots and sets them in the cart in waiting.

Capt. Israel was the originator of the Piscataqua Navigation Co., which has been such a financial success in the transportation of brick. With this invention the whole brick transportation will be revolutionized, for by this machine bricks will be loaded and unloaded in large quantities by machine instead of by hand. Nothing of the kind has ever before been invented.

A lifter is now on exhibition in the building adjoining the P. K. & Y. ferry landing in this city, where it will be on exhibition daily from 11 to 12 a. m., and explanation given by Capt. Israel in person.

It is the purpose of Capt. Israel to form a barge company to be known as the American Brick Barge Company with a capital stock of \$50,000 divided into 1,000 shares of \$50 each. As soon as sufficient capital has been subscribed to build one barge costing about \$12,000 with a carrying capacity of 300,000 bricks the subscribers will be notified and ten per cent of their subscriptions called for and receipts given. In December 50 per cent additional will be paid in for the vessel and in February the final 40 per cent will be paid and stock certificates issued.

Of Capt. Israel's practical experience in the building of vessels it is perhaps unnecessary to speak. It may be said however that he has built eleven vessels, including barges, schooners and steamboats.

DOING A RUSHING BUSINESS

The Salmen Brick and Lumber Company Slidell, La., in the past twelve months manufactured 27,834,294 brick, 17,152,120 feet lumber, 11,904,000 cypress shingles, 1,950,000 laths, and pine piling, if in one piece sufficient to reach from New Orleans to Ellisville—132 miles—and disbursed for labor \$286,900.61.

The Clay Products Co., of Texarkana, Ark., has been incorporated with \$25,000 capital stock and purchased the Parkhurst Pottery north of town and will enlarge it to four times its present size. John T. Owsley is president, Ralph G. Moore, vice president, F. W. Mullins, treasurer, and L. E. Howe, secretary.

SLATE WASTE FOR BRICK

The use of slate waste in the manufacture of brick has been revived. The Virginia Clay and Material Company, Farmville, Va., has purchased the property of the Lehigh Granite Brick Company, lying between the Central Railroad of New Jersey and the Lehigh Valley Railroad, near Allentown Pa., and will start work manufacturing a superior grade of building bricks. In the manufacture of the brick, which will be an ornamental faced building material white sand, white clay and the waste slate that is found in perfect mountains about all of the slate manufacturing plants and around the many quarries will be utilized. The company located will be the parent company for eight counties, the district comprised of Lehigh, Luzerne, Northampton, Carbon, Schuylkill, Lancaster Lebanon and Lackawanna counties. The company will buy or erect new manufactories wherever the conditions are satisfactory for the work.

A BAN PLACED ON FREIGHT CAR ADVERTISING

The ban placed upon freight car advertising by all railroads in the United States has aroused a storm of protest from shippers in every part of the country.

Officials of the various roads are receiving complaints daily from shippers who do not like the order the Master Car Builders' association put into effect on September 1. The railroads, however, will not recede from the position they have taken.

Much advertising matter on box cars is being destroyed daily for being used after the issuance of the prohibitive order, and the cost of removing signs from the cars is being charged to shippers.

One slight concession has been granted in some instances by the railroads for the time being. Many big shippers had quantities of car advertising material on hand, and the railroads have given them until January 1, 1908, to get rid of this material.

"The railroads will not recede one step from the stand they have taken against box-car advertising," said one of the big trunk line officials. This method of advertising grew to such proportions that the master car builders were forced to take some action against it.

"Some shippers nailed their advertising signs on all kinds of cars, whether laden with their own shipments or not, and they used big ten-penny nails. These nails often penetrated the goods inside the car and damaged them as well as the cars. Others put signs on the cars with glue, and it cost us time and money to remove them. The privilege of box-car advertising was abused to such an extent that our cars were soon the unsightliest of objects.

"We're getting lots of complaints from the shippers, but they have complained of other things, too. We're removing advertising signs now, and the shippers are paying the cost."

The National Brickmakers' association has sent letters to executive officials of all the railroads, complaining vigorously against the advertising prohibition. They admit that the custom has become a nuisance. They contend, however, that the railroads should not put a general ban upon the practice, but should fix a standard size for all advertisements placed on cars and provide for their being properly affixed.

The brickmakers propose that advertisements used in this way should bear only the name of the shipper, the name of the consignee and the point of delivery.

SAND OR LIME BRICK OR BLOCK NEWS

The San Antonio Brick Co., San Antonio, Texas, has completed their 40,000 capacity sand lime brick plant.

The Indiana Sand-Lime Brick Co., has sold their plant in Indiana and will probably erect a factory at Waycross, Ga.

The Diamond Stone Brick Co., of which Edward S. Neilan is president, was in New London, Ct. to find a location for its new plant. The company makes brick from sand.

The Los Angeles (Cal.) Pressed Brick & Crushed Stone Co. commenced building their large plant between Burbank and San Fernando, where large deposits of granite has been found.

The Lehigh Granite Brick Co.'s plant at Allentown, Pa. has been sold to A. D. Flower for the Virginia Clay & Material Co., of Farmville, Va., who will at once make brick under their process, which uses white sand, white clay and waste slate from the quarries.

The Luverne (Minn.) Pressed Brick Co., which was incorporated a short time ago with \$55,000 capital stock has its new plant ready for operation and will begin work as soon as lime is received. The plant is equipped with a 125 h. p. engine, 150 h. p. boiler, a rotary sand dryer, fan, and lime crusher, automatic measuring machine, tube mill, pug mill, two silos and a four mold Boyd dry press. The plant was purchased complete from the Memphis Granite Brick Co. J. E. Joyner, of Memphis, Tenn. superintended the moving.

The Interstate Pressed Brick Co. has been incorporated with \$100,000 capital stock at St. Paul, Minn., by C. H. Watson, F. T. Day and G. L. Rolfe.

George E. Dungan, receiver for the Daleville (Ind.) Sand Lime Brick Co., has made his final report and sold the property which has been approved by the court.

The receivership of the Savannah (Ga.) Sand Lime Brick Co., whose plant it at Eden, has been continued. The plant is making money and will work out its own destiny.

A. T. Pooley, 1615 No. Weber St., Colorado Springs, Colo., will build a plant at a cost of \$10,000 for the manufacture of cement blocks, brick, etc.

The Illinois Granite Brick Co., Chicago, Ill. has been incorporated with \$250,000 capital stock, by Oscar M. Steffens, Joseph A. Grober, and Arnold D. McMahan.

A. B. & Brooks Fleming have chartered the Western Company of Fairmount, W. Va., for the purpose of manufacturing stone, brick and other building material. The capital stock is \$160,000.

The Hansen Sand Lime Brick Co., Hansen, Ga., will enlarge its plant to three times its present size necessitating the installation of additional sand lime brick machinery, presses, cars, etc.

If you are interested in the sand lime brick industry do not fail to attend the convention of the National Association Manufacturers of Sand Lime Products which will be held at Columbus, Ohio, December 4-5-6th, 1907. Headquarters will be at the Chittenden Hotel.

The New San Francisco Continuous Kiln

is the only CONTINUOUS KILN having regenerative furnaces for burning bricks with CRUDE OIL or POWDERED COAL

This kiln has the greatest thermic efficiency, for the following reasons:

FIRST—A perfect system of regulating the velocity of gases through the kiln.

SECOND—No excess of air, such as is required in UP-DRAFT or DOWN-DRAFT kilns.

THIRD—Perfect air recuperation.

FOURTH—Perfect combustion.

FIFTH—Loss by radiation reduced to a minimum.

SIXTH—No cold air admitted with the fuel in the combustion chambers.

SEVENTH—Heat generated instantaneously.

EIGHTH—No delays, no waiting for the coal or other fuel to ignite, as in the ordinary continuous kiln.

NINTH—The burning bricks receive the full benefit of all the heat produced, as the combustion chambers are contiguous to the kiln.

TENTH—The amount of heat generated is at least 100% greater than that produced by coal screenings dropped between the burning bricks in a given length of time, in the ordinary continuous kiln.

CONSTRUCTION

This kiln can be constructed with 10% less material than the ordinary continuous kiln.

The outside and inside walls, etc., are left down to a point four feet below the coal-floor line of the ordinary continuous kiln, the arch only being built above this line.

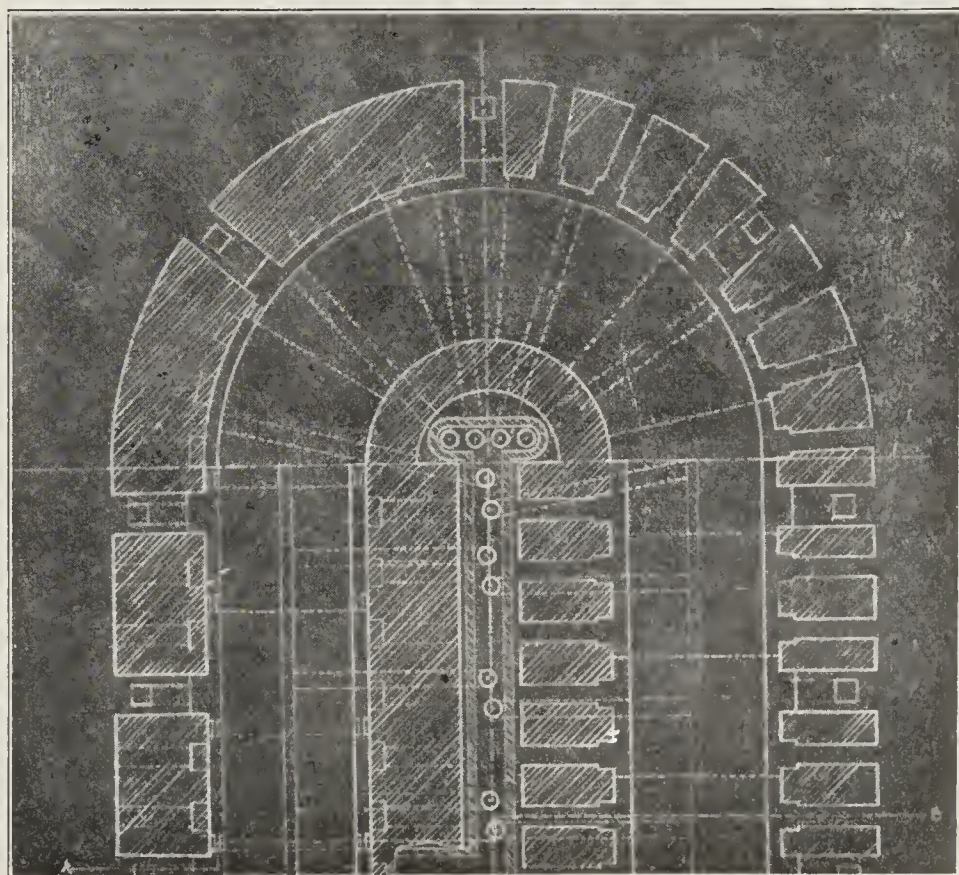
There are no BAGS or BAG WALLS to take down and rebuild when the kiln doors are opened and sealed up.

Has no complicated system of flues.

Has no complicated system of GAS PRODUCERS.

Can be arranged for utilizing the surplus heat with a blower, no chimney being required in this case.

This system applied to a HOFFMAN KILN will increase its capacity at least 100 per cent.



WILLIAM A. BUTLER, Patentee, 34 Parkside Ave. San Francisco, Cal.

MISCELLANEOUS ITEMS

Del Rio, Texas is soon to have a brick making plant.

W. J. Stites has sold his tile factory west of Van Wert, O., to N. O. Tindall, and he has already taken possession.

John Harris of Barron, Wis., will build a plant to make brick at Ladysmith, Wis., in the spring.

A kiln has been rigged up at the Walker Veneer plant, Alpina, Mich., in which to burn brick, tile, etc., in experimenting with the clay from W. T. Jones' farm in Grein.

The Thomaston (Maine) Face and Ornamental Brick Co., has been organized and is now called the St. Georges' Brick Co.

The Peebles Brick Works at Portsmouth, Ohio, is to be enlarged in order to take care of the demand for their goods.

The Summitville (Ind.) Drain Tile Co., has just completed a two story brick dry house which will double their drying capacity of tile.

A movement is on foot to start another brick plant at Brazil, Ind., for the manufacture of paving brick. \$100,000 will be spent in the undertaking.

The Friars Point (Miss.) Brick & Tile Mfg. Co's., plant which has been shut down for several months will be started up again at an early date.

T. E. McDow, receiver for the McNeil Pressed Brick Co., Newburn, Ill., is operating the plant under the receivership.

The Grand Ledge (Mich.) Clay Products Co., has recently installed a dynamo of their own and are now able to supply their own light.

The Dillsburg (Pa.) Vitriified Brick & Tile Co., have installed a new 150-horse-power engine and two 100-horse-power boilers in their plant west of town.

The Hocking Valley Brick & Terra Cotta Co., Columbus, Ohio, which intended building a large clay plant in the Hocking Valley, has surrendered its charter to the state.

The Commercial Club of Falls City, Neb., have some shale on exhibition that if proved satisfactory they will organize a brick plant there.

The Gulf States Brick Co., which owns two large brick plants in Beaumont, Texas, are now changing their burning system and will burn with wood instead of oil. They claim that the oil at the present price costs too much.

The plant of the Albany (Ga.) Brick Co., has been greatly improved this year. They have purchased land across the Flint River and will erect an aerial cable tramway to carry clay to the plant.

The Youngstown, (O.) Roofing Tile Co., has been incorporated with \$50,000 capital stock to manufacture tile for roofs. The officers are John R. Squire, E. H. Turner, C. Thornton, C. W. McNab and Will B. Jones.

The Clarendon (Vt.) Clay & Mining Co., has been incorporated with \$50,000 and will erect a \$15,000 clay plant. The officers are J. C. Bump, of Ticonderoga, N. Y., president; G. H. Bump, of Brandon, Vt., secretary, and W. W. Jeffrey, of Ticonderoga, N. Y., treasurer.

The Carlyle Brick plant at Portsmouth, Ohio, has constructed a wall or dyke nearly one-half mile in length on the Ohio river side of their plant to keep the floods off the plant.

The Frankfort (Ind.) Brick & Construction Co. will sell its brick works and devote their entire time to other matters.

The Davy Burnt Clay Ballast Co., Kenosha, Wis., has forwarded to the state secretary an amendment decreasing its capital stock from \$500,000 to \$120,000.

The Columbia Brick & Plaster Co., Belaire, Md., has been organized to operate the plant of the old Maryland Art Brick & Tile Company.

The Scanlon Brick Co., Crescent, N. Y., has been awarded a contract to furnish 2,000,000 brick to the new yarn mill.

The machinery for the Baldwin County Brick & Pottery Co., Milledgeville, Ga., is being installed and will be in operation within a week.

William F. Stimmel, Kutztown, Pa., will build a dryer so as to be able to manufacture brick during the winter. The demand for brick from his kilns is more than he can supply.

The Eastern Illinois Brick Co., Beecher, Ill., resumed work at its plant after a three weeks' shutdown to make repairs and build additions.

Mr. Kelsh, manager of the A. C. Wood Brick Co., Corona, Calif., states that he has received orders to commence the erection of buildings and sheds for the plant at once.

Louis Vogle, of New York City, is at Weir, Kansas, arranging for the installing of another brick plant to utilize the immense body of fire clay underlaying his land south-east of town.

The Watson, Malone Miller Co., Fairmont, W. Va., has been incorporated with \$180,000 capital stock for the purpose of manufacturing, buying and selling stone, brick, lumber and other building materials.

Work has been started on the \$15,000 plant of the Clarendon (Vt.) Clay & Mining Co., which has been incorporated with \$50,000 capital stock. L. C. Bump, of Brandon, is president.

The Brooks Brick Co., Brewer, Maine, have put in their first round down draft kiln, the first in that section of the country. H. N. Brooks, formerly of Orrington, has charge of the yard.

The big brick plant of the Tennessee Brick & Mfg. Co., Chattanooga, Tenn., is delivering its goods from the new Cities plant, Robert B. Henderson, president of the company says the product, and plant is satisfactory in every way.

The Philadelphia Land, Building & Mfg. Co., 1229 Real Estate Trust Bldg., Philadelphia, Pa., will erect a brick plant in that city during the winter and wants information regarding brick machinery. Rhoads Shee is the general manager.

The new brick plant of the Columbus (O.) & Hocking Coal & Iron Co., at Kachelmacher, Hocking Co., has been running for two weeks and it pleases its owners with its product. Next spring other plants will be built by the same company in the same locality.

The Empire Brick & Gas Co., Joplin, Mo., is now building at New Albany, Kansas, a modern brick plant that will employ 65 men to operate the building when all completed ready for the machinery. After this plant is completed a second brick and tile plant and glass factory will be built by them.

A recently organized company is preparing to reopen the clay works at North East, Md.

Henry Bruaw & Son, Cerro Gordo, Ill., have decided to quit making brick and tile and will sell the plant which has been profitable for 25 years.

The W. S. Dickey Clay Mfg. Co., of Kansas City, Mo., has been awarded the contract to furnish sewer pipe to the city of Lincoln, Neb., for the year 1908.

A large deposit of valuable fire clay has been found near Canton, N. Y., and there is a possibility of a factory being built for the manufacture of brick and tile.

The National Pressed Brick Co., of Illinois, has filed articles to show that it has been incorporated with \$24,000 capital stock, of which \$500 is to be employed in Missouri with an office in St. Louis.

The Houma (La.) Brick Co. is a valuable addition to that town. They recently have installed a E. M. Freese & Co. outfit of 25,000 capacity and are making excellent brick. M. H. Webb is the secretary and manager.

The Quaker Valley Clay Co. sold its plant at Rogers, O., to the Connor Sewer Pipe Co., of Toronto, O. Charles Reddick, who has been the superintendent, will take charge of a plant at New Philadelphia, O. John Elliott, of Lisbon, was the largest stockholder.

Sylvester W. Cramer and associates, who have been conducting The Pittsburg Brick Co. works, located near Franklin, Pa., have made a new deal and the concern will hereafter be known as the Franklin Shale Brick Co. and will turn out a larger output than formerly.

The U. S. court has granted the receiver the right to operate the Montello Brick Works plant at Perkiomen, Pa.

The Entrees Brick Co., Pittsburg, Pa., will erect twenty dwellings at Webster Ave. and Kirkpatrick St., Pittsburg, Pa., at a cost of \$60,000.

G. W. Hadley, owner of the Northwest mine at Jasonville, Ind., is making preparations to build a shale brick plant, which will employ 150 hands.

The National Glass Brick Co., Connellsville, Pa., will immediately make preparations for the erection of a plant. Satisfactory tests have been made.

After one of the most successful seasons in the history of the company the Drury Brick & Tile Co., Essex Junction, N. H., closed down the yard for the season.

The Iola (Kansas) Portland Cement Co. has been granted a charter with \$4,500,000 capital stock. The fee to the state of Kansas was \$2,327.50. It will build a factory at Iola.

The Gulf States Brick Co., Beaumont, Texas, will install new equipment to its plants, adding besides other improvements a complete dry press outfit, dryers and down-draft kilns.

The Ellwood Brick & Limestone Co., Ellwood City, Pa., has been incorporated with \$30,000 capital stock by Thos. J. Folmer and Frank Douthitt, of Ellwood City, and John Montgomery, of Sewickley.

Robt. H. Pehyfe, until recently superintendent of the Newburgh (N. Y.) Brick Co., has bought a grocery at 212 Broadway and retired from the brick business. He was seriously injured some months ago by being caught in the belting at the works.

The GILLETT DOORLESS Hot Air FIREBOX For Blast Kilns

Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

DIRECT HEAT DRYERS

**FOR
BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

CLAY RECORD.

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

FOR SALE

One Quincy Clay Gatherer and Plow. Brand new, in use only two weeks. Address,

Elk City Brick Co.
Elk City, Kansas.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enameled Brick & Tile Co.
1 Madison Ave. New York

NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$24000, of 240 shares, at \$100 each at par. To equip a complete brick making plant on field of 60 acres, proved at 40 feet and analyzed by the Henry Martin Brick Machine Mfg. Co., of Pa., U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway Siding of Claysmore, on the C. N. R., 6 miles from Vermilion City. The Bull's-eye of the famous Saskatchewan Valley, and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field, on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER EASON
Pioneer Builder and Contractor
Vermilion, Alta.

Solicitor
K. V. Fieldhouse, Esq., L. T. B.,
Vermilion, Alta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York.

WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAPGOODS,
305 Broadway, New York City, or
1010 Hartford Bldg., Chicago, Ills.

FOR SALE

A three kiln brick and tile plant in Northwestern Iowa. Sale for more than can be made. Anyone interested in a good money making plant address

LOCK BOX 29 CARE OF CLAY RECORD
Chicago, Illinois

BRICK YARD FOR SALE

Old established yard in good town of 5,500 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL
Maryville, Mo.

FOR SALE CHEAP AT ONCE

Good Brick Yard in county seat, capacity 30,000 brick daily. Can't supply the demand, for brick at \$8.75 to \$10.00 per thousand. Fine clay seven feet deep. Good Machinery, good water, plenty of wood free for hauling less than 1/4 mile. Plenty of labor and 465,000 brick now contracted for. Good reason for selling. No competition. Address

GEORGE BARNEY,
Leesville, La.

FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address

C. SOLFISBURG SONS
Aurora, Illinois

BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant, local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the

BUSINESS MEN'S ASSOCIATION
Jacksonville, Illinois

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

KAOLIN FOR SALE

Have just discovered and offer for sale the finest quality of Kaolin ever mined in Georgia, or the south.

L. T. LEE, Zenith, Ga.

PLANT FOR SALE

A good steam brick plant for sale, Chambers Bros. Co. Brick machinery, engine and boilers in first class order. Lease expiring.

JOHN HANARTY & SON
58 and South Streets
Philadelphia, Pa.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:

4. J. CARE OF CLAY RECORD
Chicago, Illinois

PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soft mud and stiff mud machinery, engine, boilers and sheds for 8,000 brick daily. Two Clamp kilns and Stewart kilns. Plant runs steady and can't supply the demand at good prices.

Write to J. WYNN
Weldon, Iowa

PLANT FOR SALE

On account of too much other business to look after I will give you a bargain on a first-class brick and tile plant located at Edgewood, Clayton County, Iowa. For particulars write.

S. L. CLARK,
Redfield, So. Dak.

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

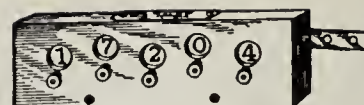
A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

A fine Kaolin bed of 130 acres, with strata of excellent clay from 12 to 16 feet deep, light over burden of soft sand. Good plant already erected. Large quantities have already been mined and sold. Can be bought cheap. For information and samples, address

J. B. SALLEY, Attorney,
Aiken, S. C.



Paper Joggers quoted.

R. A. HART, 41 White St., BATTLE CREEK, MICH.

No better made, cut from \$8 and \$10, to

4 Wheel, \$3.00

5 Wheel, \$3.25

Guaranteed.

Sold by all dealers.

BUSINESS WANTED

I can sell any business or real estate that is salable, no matter where located. I reach the people who buy. A trial will convince you. Established in 1881. If you want to buy or sell, address,

FRANK P. CLEVELAND,
1726 Adams Express Building
Chicago, Illinois

FOR SALE

Fifteen thousand dollars of the Treasury Stock of the Liberal Brick and Tile Co. Capacity of plant when complete, 50,000 vitrified brick per day. Ready market at Kansas City and Springfield, Mo. Object in selling, to complete plant.

LIBERAL BRICK & TILE Co.
Liberal, Mo.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.

Care Clay Record, Chicago, Ill.

FOR SALE

One Raymond Rotary Automatic Down-Cut Cutter, with 40 feet of off-carrying belt and separating table. This machine is brand new, but we want the room immediately and will accept any reasonable offer.

BAKER IRON WORKS
Los Angeles, Cal.

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.

Box 81.
Independence, Iowa

PALLETS FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address,

MARTIN
Box 587
Lancaster, Pa.

POSITION WANTED

Position as Superintendent or Manger of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. References. Eastern plant preferred. Address

"PAVER" Care of CLAY RECORD
Chicago, Illinois

FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co.

Sandusky Portland Cement Co.
Sandusky, Ohio

FOR SALE CHEAP

On the Pacific Coast. One Eagle Double Mold Repress, practically new.

BELLINGHAM BRICK & TILE CO.
South Bellingham, Wash.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

709 Chamber of Commerce,
Astoria, Oregon



Vol. XXXI. No. 10.

CHICAGO, NOVEMBER 30, 1907.

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Single Copies, - 10 Cents

PRESIDENT MILLER'S ADDRESS TO THE CANADIAN CLAY PRODUCTS MANU- FACTURERS AT OTTAWA

It affords me great pleasure to welcome you to this, our sixth annual convention of Canadian Clay Products Manufacturers.

It is an honor, and I deem it such, to have the duty devolve upon me of welcoming you on this occasion, especially meeting as we do in the capital city of our Dominion, with its magnificent buildings, beautiful scenery, extensive manufacturers, and best of all, its hospitable people.

It is gratifying indeed to look around and see so many from all directions and remember how far many of them have come specially to be present with us and take part in the discussions.

Experience has taught us it is good to come together at least once a year and compare notes.

The program, arranged very carefully, and papers on which much valuable time has been spent, and the discussions following the reading of which bring out so many valuable points, is only a very small part of the work performed.

The lobby talks, where we meet those who have mastered troubles such as we are up against and are willing to help us overcome them or suggest ways to us at any time must not be overlooked.

Then we have our exhibition room, where you meet the dry press man and the stiff mud advocate, and all other kinds of machine men; the fellow who has all competitors skinned in drying brick, and the one who cuts them faster than they can possibly be handled. There is no doubt we will find the kiln man, too, who requires almost no fuel to burn with, a very desirable acquisition, too, just now. I like to meet the man with a hobby, who at any rate appears to believe in it themselves, and try to make you believe in it, too.

We have experienced another year of phenomenal prosperity in Canada from Atlantic to Pacific. From every quarter comes the word, "We could hardly fill our orders." My, we like to have it so.

Many changes in conditions have arisen during these last few years which can not fail to have been noticed.

The time of the year is near at hand when we must reckon on what has been made during the season of what seems to be a very large turnover.

Most of us have been enjoying what we call good prices, but with increased cost of fuel, labor, transportation, etc., many will find the net profit will not be as great as we would wish.

These are some of the problems we must try and seek a solution for, viz.: The production of the best brick possible and the delivery of them to the customer in the best possible condition, at the least cost to ourselves, so as to provide against a day possibly not far off when cost may not be materially reduced, but selling prices may have dropped.

There is another matter being continually rung in on all who are engaged in the brick business, and this, I think, is worthy of notice.

We are being reminded every little while by parties interested in having it so, of course, that in a very short time brick will be a thing of the past as a building material, being supplanted by cement, iron, etc., etc.

While we do not believe there is any material in the world which will ever approach a well-burned clay product for construction purposes, either as regards rapidity of construction or safety, nor yet on sanitary grounds under normal conditions, nevertheless we begin to ask why all this agitation for a change?

Will we not remember brick is a tried, trusted and proven material, its use dating back almost to the beginning of time. There must be some cause.

Is it to be found in scarcity of raw material? No, for we say the everlasting hills are scarcely scratched yet, to say nothing of what is below.

Is it scarcity of fuel for burning our product? No, I would say not, for while there has generally been a considerable advance in prices, yet there seems to be plenty of fuel.

Is the quality of material manufactured in this country of such a character that a change is absolutely necessary for safety of life and property? There may be places where a

little more care, both in making and burning would improve the reputation of manufacturers, but the quality of brick required in all our large cities, especially on mercantile and government buildings, is such that it has led manufacturers to improve their plants with a view of turning out the best brick possible, and I am free to say, on the whole, I believe we compare more than favorably with other countries, we being but striplings in years as compared with some of them.

I have heard it stated, and would like very much to know if it is true, that the reason for all this agitation was to be found in the fact that it cost altogether too much to have the brick placed in the wall after being delivered on the work, and that by using these other materials a class of labor (almost entirely foreign) wholly unskilled, and most undesirable as citizens, can be utilized.

Yet we are told they can be controlled by the men who pay them, while on the other hand the claim is made they are at the mercy of the trade union, whose members work when they like, as they like, demanding the highest wages.

If these assertions are true it brings us face to face with a serious problem, and one which our friends who pay for the brick would do well to look carefully into.

Are an honorable class of skilled mechanics who build structures of material that defy the ravages of the elements and time itself, are these good citizens to be supplanted by those who have no aspirations to ever become citizens? And are our public buildings and homes to take the appearance of plastered or rough-cast tenements on the back streets and poorer quarters of our cities, simply because a common ground has not been reached between those who buy our products and those who make them take the form of buildings.

There is food for serious thought here for the manufacturer, the purchaser, the bricklayer and helper, and surely for the glory of our land and beauty of our cities and homes there should be a reasonable and satisfactory solution.

I confess when passing a cement building to a feeling something like one experiences when entering a morgue. There is nothing bright and cheery, as there is to be found in a brick structure.

Our life work is an honorable and noble calling, building up and beautifying this great country. Let us see to it we do our part well, and let me hope the discussions which arise may help us to do better than ever before.

Our time and session is limited, so I hope every one may be in their places on time and facilitate in every way possible the business before us, and may we have one of the most successful and profitable conventions ever held, not only in Canada, but anywhere else.

I soon shall vacate the presidential chair, and hope you may extend to my successor the same considerate treatment and co-operation in the work of the association which has been accorded me. It has been a pleasure to serve you.

The O'Kelly Brick Company of Ashland, Kentucky, have placed contracts with the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa., for the erection of a "Martin" 30,000 daily capacity patented rack pipe steam brick dryer complete including automatic coable delivery system.

ANDREW F. BARRON

We are pained to chronicle the death of Andrew F. Barron, which occurred November 21st, at Toronto, Ontario. Mr. Barron was born in St. Mary's, Ontario, and was fifty-seven years of age. He came to the United States over thirty years ago, engaging with the firm of Wolff & Curran, at Chicago, as lumber dryer specialist, later taking up the drying of all kinds of clay goods. It was in this work that Mr. Barron became most proficient.

In the late eighties the firm changed to the Wolff Dryer Company and Mr. Barron was advanced to the position of chief engineer and dryers for clay works were manufactured exclusively. The experience of the drying of clays from all sections of the country made him an expert on the subject. His investigations of the clays were always careful, thorough and exact. If he thought he could not handle them satisfactorily he was never slow in informing the customer of the facts, thus making many friends.



ANDREW F BARRON

In the year 1898, A. F. Barron succeeded the Wolff Dryer Co., and in the fall of 1902 the firm was again changed to the Barron Dryer Company, taking Mr. Alfred E. Barron into the firm, now located at 84 La Salle street.

About a year ago, Mr. Barron and associates organized what is known as the Barron Brick Company, Ltd., at Toronto, Ontario, to build a large brickmaking plant at Weston, eight miles from Toronto at the intersection of the Grand Trunk and Canadian Pacific railways. A fine deposit of shale land was purchased and machinery was being installed so that if Mr. Barron had lived the plant would have been ready to operate within a month or so. It was while superintending the construction of this plant that he was stricken down with a paralytic stroke.

He leaves a wife, son and daughter to whom we extend our sympathy. With pleasure we recall his high attainments, gentle bearing and disposition which he leaves as a heritage to his friends and associates.

TO PREVENT TILES FROM "STICKING"

It is well known that the ordinary flat roofing tile has a great tendency to stick to others whilst being fired in the kiln, but this is usually due to careless setting or to overfiring, and the remedy may be easily found with a little care.

When, however, the tiles are made with a mouthpiece attached to the pug-mill or press, they are often, for economical reasons, made two or more at a time from the same press, the two bands of clay being produced one above the other, with the upper band bending downwards, and finally resting on the lower one.

This method of working has the advantage of occupying little space and plant in comparison with the output, but unless proper precautions are taken it will be found difficult to separate the two strips of clay from each other—particularly when they have been partially dried—without damaging one or the other of the tiles.

Clays differ greatly in the tendency which they have to adhere to one another when two pieces of the pressed material are laid on each other, but it will generally be found that the more plastic the clay, and the softer it is, the more likely will it be to adhere. Acting on the experience, R. Hielcher has recently published the following seven suggestions for preventing clay tiles in the green state from adhering with such tenacity to each other that they cannot be separated without breaking one or the other.

1. The addition of burnt clay ("brick dust") to such an extent as will overcome the excessive plasticity of the clay will often prevent the sticking, but care must be taken not to use too much of this burnt grog, or the tiles will not be properly shaped owing to the shortness of the clay. Sand, if of suitable quality, will often serve instead of burnt clay.

2. Storing the clay for some time in a well-worked state—that is, just before it is ready to be made into tiles—will often assist in the manufacture of tiles from an otherwise difficult clay. This storage (or "souring," as it is often called) allows of the better and more even distribution of the water in the clay, overcomes the "stickiness" which is characteristic of many clays when they come from the press, and by increasing the binding power which diminishing the tendency to adhere on simple contact, produces a much stronger tile than when no storage is allowed.

3. The addition of a more refractory clay will be desirable if the tiles stick to each other in the kiln, and the firing temperature cannot be reduced. A similar result may be obtained by using burnt fire-clay dust instead of the brick dust recommended in 1.

4. Much of the trouble of sticking tiles may be prevented by working the clay more stiffly—the stiffer the better—and, provided the proper mixture of clay and water takes place, and the necessary internal binding of the clay particles is secured, the more solid the clay issuing from the press the less likelihood is there of "sticking" difficulties.

5. In order to prevent the rupture of the upper band of clay coming from the press, small rolls may be arranged, or some species of slide provided, so as to make a support for the clay during its descent on to the lower band. Such an arrangement also prevents the lower band of clay from

being under such a pressure from the upper one, and stops much of the tendency to adhesion between the two bands.

6. Careless handling during transport of the green tiles to the dryers and kilns is responsible for many "stuck" tiles, for each time that a tile is laid suddenly or rapidly on another the tendency to adhere is increased. Just as a brickmaker secures perfect adhesion of the different pieces of clay by bringing them sharply down on each other, as with a sudden throw or fall so dropping a tile suddenly on another, or on a pile of tiles, will almost certainly cause some of the lower ones to become fastened to each other, though this may not be discovered until after the kiln has been drawn.

It not unfrequently happens that the burner is blamed for overfiring and causing tiles to fasten themselves to each other, when the real fault is with the setters, who have not handled them with sufficient care.

7. With clays which sinter easily, the man in charge of the kiln must be particularly careful, as otherwise he may cause untold damage by overfiring, especially in the hotter parts of his kiln. Many clays used for tile making will not stand a sudden rise of temperature, as the thinness of the articles renders them more sensitive to changes in temperature, and an excessive rise of temperature for a few minutes (which does no harm in a brick kiln, on account of the time it takes for the heat to penetrate through the thick bricks) would spoil a large number of tiles, even though they were made of the same clay.

The prevention of "sticking" is, therefore, to be found in a stiffer, less plastic clay, in greater care in the manufacture, particularly in the handling of the green tiles, and in the management of the kiln.—British Clay Worker.

**MILES OF TILING COMPLETED ON STATE
EXPERIMENTAL FARM**

Recently workmen completed 9 miles of tile drainage work on the state experimental farm north of Crookston, Minn. The work has been done under the personal supervision of Engineer Stewart of the Department of Agriculture at Washington, D. C., and is the first drainage of the kind ever attempted in that section. Several different varieties of tiling was used, cement tile from Glencoe and Hutchinson having been used, and clay tiling from Mason City and Fertile, Iowa, and Lengby, Minn., in order that all might be tested. Nine miles of tiling has been used and the entire system is considered to be a most excellent one. The results will be watched very closely and a number of wealthy farmers are already so confident of its success that they have ordered tiling which will be laid next spring. The tiling was not laid below the frost line, but it is claimed that where the fall is sufficient that the frost will not affect it in the least.

Messrs. Fell & Roberts of Trenton, New Jersey, have placed contracts with the Henry Martin Brick Machine Mfg. Co., at Lancaster, Pa., for the installation of a complete "Martin" outfit of brick making machinery, including "Martin" improved Style "A" steam power brick machine in combination with horizontal pug mill, mould sander, compound crusher, etc.

THE BONNOT STANDARD PIANO WIRE SCREEN

One of the serious problems that all clayworkers have to contend with, especially in this season of the year when clays are wet and sticky, is the screening of the clay. This operation is especially simplified by the use of the Bonnot Standard Piano-wire screen, which are adapted to all clays. The Bonnot Company, of Canton, O., have over two hundred of their Standard screens in successful operation, having a number in each of the clay-working states.

There are many advantages to their screens. They save in the height of buildings over some screens. Their wires are stationary and have no cross-wires, but is set at an angle of about forty-five degrees, as you can see by the illustration, and the vibration of the tightly strung wires screens the clay and keeps the screen clean.

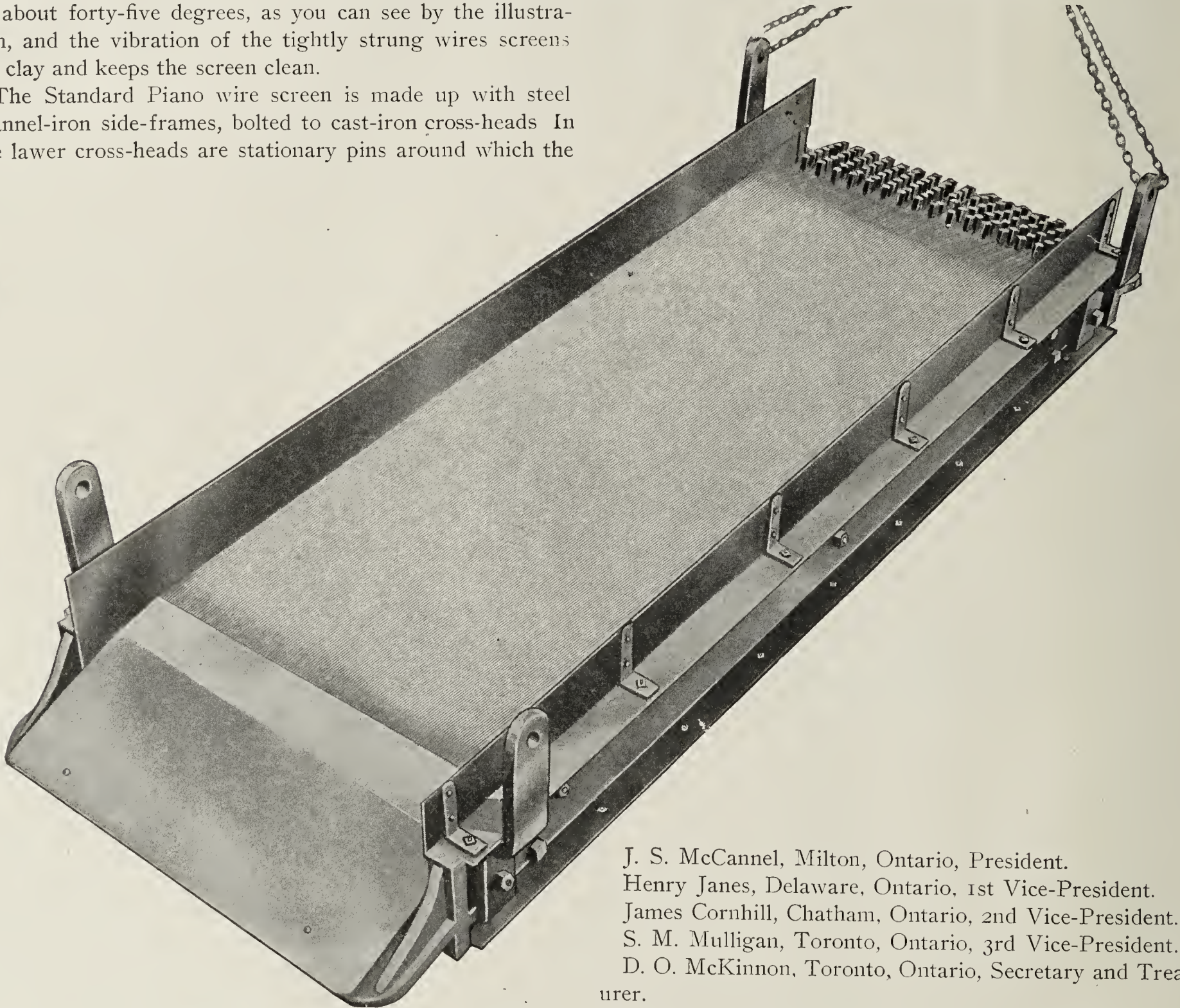
The Standard Piano wire screen is made up with steel channel-iron side-frames, bolted to cast-iron cross-heads. In the lower cross-heads are stationary pins around which the

and three feet in width, and weighs from twelve to fourteen hundred pounds.

All who have used these screens report them efficient, durable, and cheaply maintained. By writing to the Bonnot Company, Canton, O., and asking for Circular Number 12, you can get all the information required.

1908 OFFICERS OF THE CANADIAN CLAY PRODUCTS ASSOCIATION

The election of officers of the fifth annual meeting of the Canadian Clay Products Manufacturers, which was held at Ottawa, November 19-20-21, resulted as follows:



piano wire is looped, and on the upper cross-head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges.

The area of the openings is double that to be found in a screen of equal size made of perforated metal pieces, and is guaranteed to successfully screen the product of one nine-foot dry pan on an average day through the regular mesh, and often will take care of the product for two dry pans.

The size of the screen is a little over eight feet in length

J. S. McCannel, Milton, Ontario, President.
Henry Janes, Delaware, Ontario, 1st Vice-President.
James Cornhill, Chatham, Ontario, 2nd Vice-President.
S. M. Mulligan, Toronto, Ontario, 3rd Vice-President.
D. O. McKinnon, Toronto, Ontario, Secretary and Treasurer.

The executive committee are: George Close, Stratford; J. H. Ebbith, Haileyburg; John B. Miller, Toronto; W. McCredie, Lyons; H. de Joannis, Chicago; S. J. Cox, Lindsay; C. H. Bechtel, Waterloo; George Crain, Beamsville; D. Martin, Thamesville; O. Baird, Parkhill; J. B. Cain, Ottawa, and M. Mills, Ormstown.

The Committee on Resolutions expressed satisfaction for the faithful services of the officers, and especially the ex-Secretary, C. H. Bechtel, whose time would not permit of his accepting the honor any longer.

A LEADING ARCHITECT'S OPINION OF CONCRETE BLOCKS AND BRICK

The current number of the *House Beautiful* contains a splendid article by Robert C. Spencer, Jr., a prominent Chicago architect, on the subject of "What Material." It deals with cement stone, brick and terra cotta. The following paragraphs refer to cement blocks and the last paragraph to brick, showing its great favor over all other materials:

The hollow Portland cement or artificial stone block industry has grown wonderfully within a few years under the stimulus of high cost of lumber and low cost of cement. Dozens of different machines for mixing and moulding concrete are being extensively advertised, and small yards where blocks are made are appearing in every town where sand and gravel are at hand or to be cheaply had. Not only is there a wide demand for these blocks for foundation work, but many dwellings and the small buildings are being entirely built of them. It is evident that where the manufacturer of the blocks is near at hand that this material costs little if any more than wood. So hideous in appearance, however, are those imitation rock-faced stone blocks, absolutely hard and mechanical, that the writer in common with most of his professional confreres, has left the use of this material thus far to the speculative builder, and is not therefore, definitely advised as to its relative cost. The makers of block machines have been sermonized somewhat upon the immoral ugliness of their sham stone walls. Not until the artistic body of the profession demanded and employ a better form of block, will the "rock face" abominations cease to spring up. Some materials are beautiful, others are merely serviceable. Among the latter is concrete in block form, like cheap common brick it serves well as the body and bone of a wall, to be incrustated with some more seemly material like "rough cast" plaster.

To rough surfaced concrete blocks thoroughly wet, plaster with adhere solidly. The cement block house of the future if it is to be beautiful, will be in appearance a monolith, warm, light and soft in coloring. As England many of the most charming houses are of cheap bricks, rough casted, so we may hope that here, if the cement age is not fleeting—we may have many charming rough-casted houses of hollow blocks. As plain rough concrete blocks can be had cheaper than the "faced" ones, the monolithic rough cast treatment should cost little more than sham stone work of cement blocks.

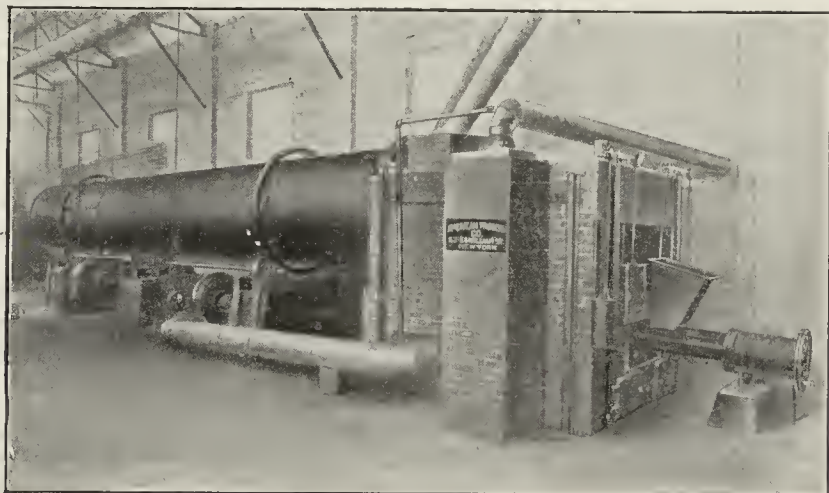
In the use of stucco over wood or concrete, there are always uncertainties of workmanship and coloring to contend with, and the architect must superintend such construction with an ever-watchful eye.

In building with brick, however, the difficulty of getting good color largely disappear, the unit of construction is relatively small and easily handled by the designer and workman, and while more labor is involved in the designing and detail drawings for brick construction—the superintendence is not difficult where good bricklayers can be had. But there's the rub. Skilled bricklayers are scarce, and incompetent ones so many and so confirmed in their bad habits that constant vigilance in superintendence is the price which the architect must pay for work which is even acceptable, particularly if he attempts any interesting effects in bond or pattern. Nevertheless, in spite of these drawbacks, brick is the ideal material for domestic architecture—in color, texture, strength and durability. It improves with age, the soft dull reds of the commoner clays fit quietly, yet cheerfully, into the summer or winter landscapes. Their surfaces invite the upward growth of clinging vines where stone is scarce.

DIRECT HEAT ROTARY BLAST DRYERS

The American Process Direct Heat Dryer is of the direct heat and direct contact type. It consists essentially of a cylindrical steel shell, provided on the interior with longitudinal shelves. Near each end of shell is a steel tire which rests on chilled, friction roller wheels. These wheels are rotated by gearing or chain belting, and they in turn impart rotation to shell. The Dryer as a whole is set on a gentle slope, determined and fixed by experience.

OPERATION—The wet material and the furnace gases enter the shell at the higher end. The wet material falls to the bottom of the Dryer, is caught by a shelf, elevated to almost the highest point of the rotation, and is then showered through the furnace gases. This cycle of operations is repeated until the material, in a dried condition, is discharged from the lower end of the Dryer. The motion of the material towards the discharge is because of the slope of the Dryer and of the draft. The material and furnace gases travel in the same direction with the highest temperature in contact with the wettest material, which procedure is theoretically and practically essential to high fuel economy.



AMERICAN PROCESS DIRECT HEAT ROTARY DRYER

ERECTION—The erection of the Dryer, with its furnace, is a simple matter and can generally be intrusted to any mechanic familiar with machinery. Complete drawings and directions are always furnished and if desired, an expert will be placed in charge of the installation and early operation.

DUST, FUMES, ETC.—To overcome troubles resulting therefrom, we have designed special dust catching, condensing and scrubbing devices which effectually prevent the loss of any material, or any nuisance from discharge of odors.

GUARANTEES—Guaranteed capacity, fuel consumption, and that the material will be properly and evenly dried without injury in any way.

ADVANTAGES—1. Automatic—requiring a minimum of labor to operate. 2. Continuous in action—hence large saving in power and increase in capacity. 3. Economical in Fuel Consumption—heat being applied direct. Large evaporation obtained from the fuel consumed. 4. Simplicity of Construction—hence requiring a minimum of repairs. 5. Low First Cost.

The American Process Dryer is manufactured by the American Process Company, 62-64 Williams Street, New York. They also manufacture continuous screw presses, cookers and digestors. Write to them if interested.

POWER PLANTS

By "CALAMITY BILL," M. E.

There is nothing in the construction of a modern brick plant that deserves so much careful consideration as the power equipment. Too often the price alone influences the brick manufacturer in purchasing his engine and boiler, and the question of economy in steam consumption is entirely overlooked. This is a mistake, as an economical steam plant will effect a larger saving, in proportion to the amount invested, than any other part of the yard.

It must be remembered that fuel consumption increases or decreases in the same proportion as steam consumption. As an instance, a simple Corliss engine, when operating non-condensing, will develop a horse power on about one-half the steam required for an ordinary throttling or plain slide valve engine. In other words, if it is costing \$5.00 per day to develop a certain horse power with a throttling engine, a simple Corliss would deliver the same power for \$2.50. This is a fair estimate, as experience has proved. On the above basis, a plant operated 200 days in the year would effect a saving of \$500.00 by the use of a Corliss engine. When we consider that \$500.00 is 10 per cent on \$5,000.00 or 5 per cent on \$10,000.00, the installation of the higher grade engine is certainly justified, even at an increased first cost.

In addition to the two types of engines spoken of above, the kind known as an "automatic" is often favorably considered. While not as economical as a Corliss it is much superior to a throttling engine in this respect, and is more substantially constructed. Of course, we might speak of compound or even triple-expansion engines, but this type is usually specified only where the horse power to be developed is much greater than that required in a brick plant.

Above all things, no matter what engine you buy, keep it clean and give it plenty of oil. Too much "monkey wrench" has ruined many a good engine. Modern engines of the types we have mentioned require very little adjusting after they have been erected properly and started. Good care and a little common sense are the main things.

Another important factor in an economical power plant is a feed water heater. By utilizing the exhaust steam from the engine and pumps, which has a temperature of 212° Fahr., at atmosphere, the feed water can be heated to 204° to 210° Fahr. This is the most important as we save about 1 per cent in fuel for every ten degrees we heat the feed water above 70°. A good open feed water heater will also remove a great many scale-forming properties in the water, such as carbonates of lime and magnesia. Sulphates require a temperature of 350° to affect precipitation and water containing this substance is usually chemically treated. A good heater adds very materially to the life and efficiency of the boiler. Clean out your heater often and do not allow it to become choked. Remember if the heater did not remove the impurities in the water, they would go to the boiler, which is more difficult to clean. A frequent renewal of whatever material you are using for filtering in your heater is also advisable.

Regarding boilers, the writer is of the opinion that a return tubular boiler with triple-riveted butt strap joints is

the best for brick yard practice. The insurance companies do not hesitate to allow 125 to 150 pounds working pressure on this type of boiler, which, as a rule, is a greater pressure than the engine should be operated under. Heavy duty engines of the better class are, however, always guaranteed for higher pressures. A water-tube boiler is sometimes desirable on account of lack of space in large yards, but this is not often the case. I can only say again in connection with the boiler plant what I have already said regarding the engine and heater. *Keep it clean.* Blow out your flues frequently and do not allow scale to form. Absence of scale and clean flues will make a big difference in your coal pile.

A little more attention to your power plant and a knowledge of the conditions under which it is running, will soon account for many leaks in your profits, not now understood. You may save a few dollars by installing patented attachments for your kilns or drier, but a modern, up-to-date steam plant, efficient and economical, will give far greater returns on the investment than any other part of your plant.

INVENTOR SAYS PAINT CAN BE MANUFACTURED FROM BRICK, TERRA COTTA AND TILE WASTE

A man in Lakewood, N. J., by the name of A. E. Williams, claims to have invented a process to utilize waste clay products such as brick, terra cotta and tile waste to manufacture a mineral paint for which he has obtained a United States patent. He has also filed application for foreign countries.

He claims by his invention to be able to manufacture mineral paint and use the best of linseed oil at one-half the price of the cheapest paint that is now being sold all over the world, and still be able to make more profit on his paint than any other manufacturer.

There are, according to latest reports, 6,033 operating firms in the United States manufacturing brick, etc., and these firms are doing a business of over \$140,000,000 a year, with an increase at the rate of \$10,000,000 a year in clay products.

Inventor Williams says all the waste from these factories can be utilized. "There is," he says, "no known substance that will hold its color for hundreds of years as brick will. This in itself proves the fastness of this paint made from brick.

"The manufacturers of other red and brown mineral paints have to get their material from the distant mines where the iron ore is first mined, ground, treated and roasted, and this, in most part, my invention does away with."

The inventor claims to be able to make the waste clay products such as brick, etc., that are thrown aside by the manufacturers pay more profit than the brick itself. The cost of this waste, he says, is only in the handling of it. With his process, the inventor claims, one brick weighing four pounds will make 12 pounds of mineral paint, or 1,000 brick, weighing 4,000 pounds, or two tons, will make 12 tons of paint, using the best linseed oil. The paint, he says, is just as good as any mineral paint in the world.

PROGRAM OF THE CLAY WORKERS' INSTITUTE

The clay workers' institute is to be held at the department of ceramics, University of Illinois, January 6 to 10th, at Urbana, Illinois, Prof. C. W. Rolfe, director, this being two weeks ahead of the Illinois Clayworker's Association meeting which will be held at Peoria, Ill., January 14, 15, and 16th.

It is the first duty of the Department of Ceramics of the University of Illinois, to serve the clay interests of the state.

This it is endeavoring to do in two ways:

By training young men for service in the industry.

By investigating problems which will help manufacturers to improve the quality and reduce the cost of their wares.

As many of the clayworkers are so situated that they cannot avail themselves of the regular courses offered by the University, the members of the Department have thought best to extend to them every possible opportunity for technical instruction.

It is for this purpose that the Institute for Clayworkers has been inaugurated, and it is for the clayworkers themselves to decide whether the movement is a step in the right direction and should be expanded.

Every one engaged in the technical side of clay working is earnestly invited to attend these sessions, whether he be a manager, superintendent, foreman, or burner. The work is to consist in part of lectures, in part of laboratory instruction dealing with the testing of clays by means of simple yet accurate methods and the use of apparatus employed in measuring temperatures and controlling the burning. In all this work we shall endeavor to make clear the principles underlying clay working operations.

Each evening an informal meeting for the discussion of particular problems proposed by those attending the Institute will be held.

It is the intention of the University authorities in general, as well as of the instructional force of the Ceramic Department, to make the stay of the visitors a pleasant one in every respect.

Those who expect to attend the session are requested to notify the director of the department. No charges whatever are made. Board and rooms may be obtained near the University at reasonable rates.

PROGRAM.

Monday, January 6th:

9:00 to 10:00 a. m. The Preparation of Clays, Professor A. V. Bleininger.

10:00 to 11:00 a. m. Clay Working Machinery, Mr. R. T. Stull.¹

11:00 to 12:00 a. m. Die Construction, Mr. R. T. Stull.

1:00 to 4:00 p. m. Laboratory demonstration of clay-testing methods.

7:30 to 8:30 p. m. Informal discussion of clay working questions.

Tuesday, January 7th:

9:00 to 11:00 a. m. The Manufacture of Augur Machine Front Brick Without Repressing, Mr. R. T. Stull.

1:00 to 4:00 p. m. Laboratory demonstration of clay testing methods.

7:30 to 8:30 p. m. Informal discussion.

Wednesday, January 8th:

8:00 to 9:30. The Drying of Clay Ware, Professor A. V. Bleininger.

10:00 to 11:30 a. m. The Vitrification of Clays. Professor A. V. Bleininger.

1:00 to 4:00 p. m. Laboratory demonstration in making burning tests.

7:30 to 8:30 p. m. Informal discussion.

Thursday, January 9th:

8:00 to 10:00 a. m. The Manufacture of White Ware, Mr. Herford Hope.²

10:00 to 11:30 a. m. Controlling Temperature and Draft of Kilns, Professor A. V. Bleininger.

1:00 to 4:00 p. m. Laboratory demonstration in heat and draft measurement.

7:30 to 8:00 p. m. Informal discussion.

1. Mr. R. T. Stull, Instructor in Ceramics, is a graduate of Ohio State University, and has had extensive practical experience along the lines of architectural terra cotta, enamelled brick and chemical stone-ware manufacture.

2. Mr. Herford Hope, Assistant in Ceramics, has for years been connected with the Mayer Pottery Co., Beaver Falls, Pa., and is thoroughly familiar with all details of white ware manufacture.

PIONEER IN THE FIRE CLAY INDUSTRY DEAD

John M. Freeman, one of the pioneers in the fire clay industry of the Ohio Valley, and a resident of Toronto, O., entered into rest at his home in Toronto, Nov. 17, 1907, at the advanced age of 83 years. He had been in delicate health for the past year and three weeks ago had an attack of vertigo from which he was subject, rallied, but was again stricken, and remained unconscious until he slept away, death coming peacefully.

Mr. Freeman was the son of the late Thomas Freeman, of Freeman's Landing, W. Va. He was born in 1824 in Pittsburg and came to Freeman's Landing, W. Va., where his parents located in 1832, his father being a pioneer of the Fire Brick Industry in the Ohio Valley. Upon reaching manhood Mr. Freeman engaged in steamboating. In 1867 he came to Toronto and entered into the sewer pipe business at Freeman's Landing, with his brothers Charles A. and S. D. Freeman, and remained in this business until his retirement in 1902. Since that time he has lived in the seclusion of his home.

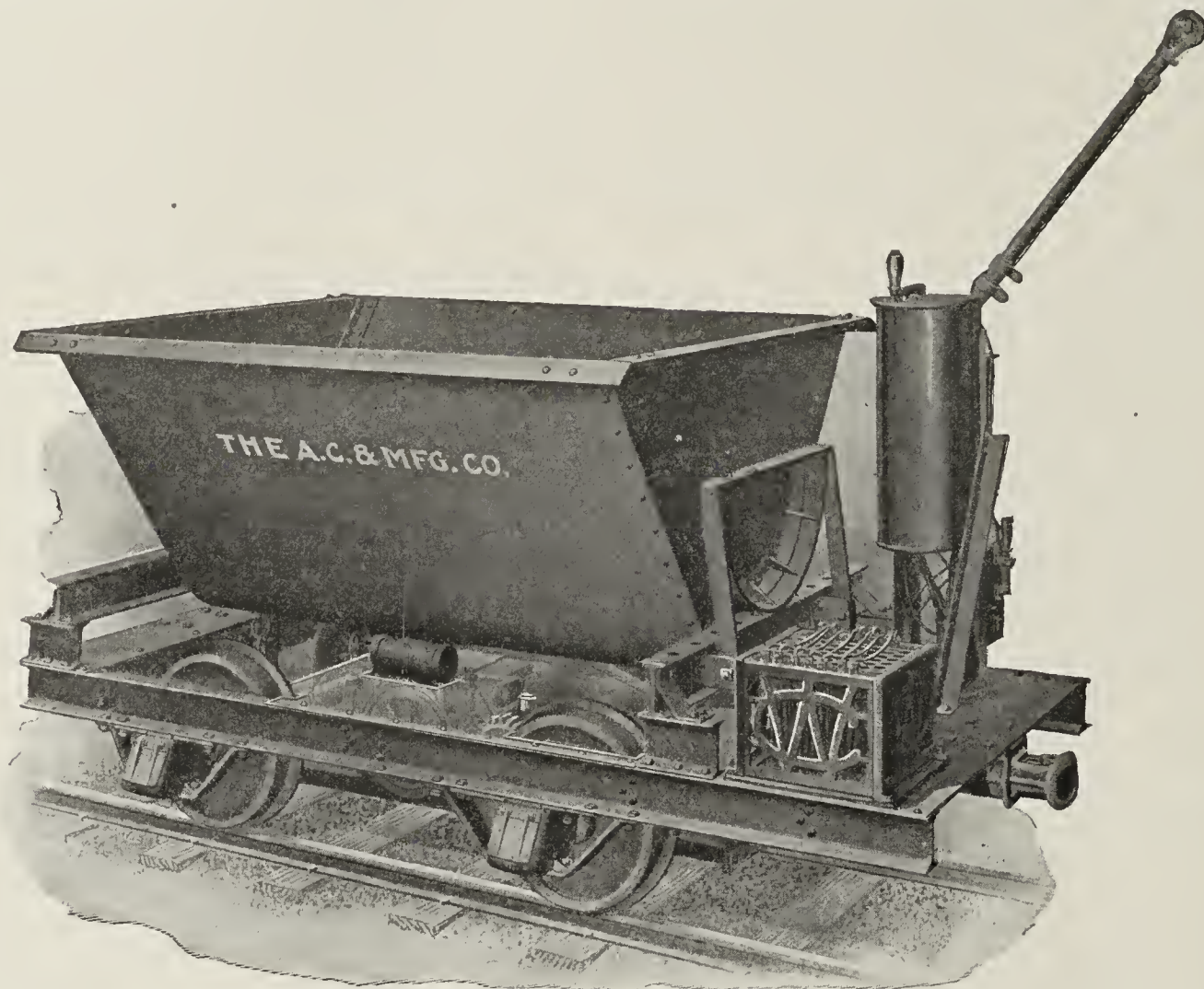
He moved from Toronto to Steubenville in 1876 and lived on South Third street until six weeks ago he sold his home and moved to Toronto. He married Miss Cyrene Jex, of Kentucky, a gentlewoman and grand niece of Alexander Hamilton. They lived in happy companionship until 1902, when Mrs. Freeman passed away. Of this union two daughters survive. Mrs. Lucile F. Rodgers at the home in Toronto and Miss Cyrene Freeman of Steubenville, and one grandson, Mark Rodgers. Mr. Freeman was one of a family of fourteen children and was the twelfth to enter into rest leaving two surviving sisters, Mrs. Mary Truesdale, of Chicago, and Miss Jennie Freeman, of Toronto. Mr. Freeman was a courteous gentleman of the old school, refined and gentle in manner, genial in disposition and intellectual in his attainments, being a great reader and keeping in touch with the current events of the day. He was a business man of more than ordinary ability, of strict integrity, and in whom advice was frequently sought by younger men.

CLAY RECORD.

THE ATLAS ELECTRIC DRIVEN CLAY CAR

The rapid development of electricity as a motive power in the past decade has brought its use into every class of labor-saving devices. The Clay Working Industries have been slow in taking hold, but at the present time some large plants are operated entirely by such means. As a flexible and economical motive power there is no power as easily and readily adapted as electricity. Through the introduction of labor-saving tools and being manufactured in large quantities, the cost of electric motors is brought within the reach of all. Especially so is this true in the street car type of motors (and of many electrically-driven devices in clay-working establishments), may be mentioned brick-making machinery, pug mills, represses, exhaust fans, transfer cars, winding drums, clay and brick cars.

trolleys being used. The cost of operating one of these electrical cars compared with steam locomotives is far less; in fact, some firms are considering putting them in for short haulage where horses are now being used as it can be operated in all kinds of weather. Very few plants today the without electrical equipment for lighting purposes, or otherwise. During the day time the generator could be used to advantage for operating these motor cars. Any ordinary handy man or boy of the average intelligence can run them; the cost of maintenance is very low, all parts are covered and accessible, being dust proof, cut steel gears with bronze bushings and other wearing parts of equal quality are used. The cost of hauling clay for 100,000 brick yard one-half a mile with six two-yard cars and one motor car is approximately 5 to 6 cents per 1,000 brick. Of course, this varies depending upon the location and circumstances.



THE ATLAS ELECTRIC DRIVEN CLAY CAR

We take pleasure in presenting a type of car which is not new by any means, particularly in handling clay, shale, etc. It has demonstrated its satisfaction to a number of concerns as an economical, quick and serviceable car. As will be noticed, the car sets very low and can be used either as a hand or steam shovel car. They are made in any capacity from two yards to six yards and a train of trail cars can be taken care of, one or more if desired. The operator has all the operating levers and attachments within easy reach; he can dump motor car, also the next trailer and take care of his trolley, brake and controller. The motor car is equipped with a cab if desired as a protection from the elements.

In some instances this car is furnished with a device so as to readily go up the inclines directly over store bins instead of being hauled by haulage drums. The cost of equipping an electrical road is very small in comparison with the saving as it is not necessary to bond rails, two

This motor driven idea can also be applied to other types of cars, depending on the material to be handled; such as rectangular bottom dump and gable bottom cars, also gauge can be varied from 18 in. to 4 ft. 8½ in. This type of car can be brought into use in many ways, such as handling common brick, pulling transfers long distances, or handling dummy cars from kiln to docks and sidings.

The Atlas Car & Manufacturing Co., Cleveland, O., are exclusive manufacturers and make a large line of electric cars as well as clay and dryer cars of all descriptions. Their new catalogue shows a number of up-to-date cars of all types. Among their customers are numbered some of the largest clay-working institutions in the country.

The Michigan Enameled Brick & Tile Co., Alpena, Mich., has been organized to manufacture clay products from clay found on the property of J. C. Walker and W. T. Jones.

CLAY-WORKING INDUSTRY

The products of the clay-working industries of the United States in 1906 were valued at \$161,032,722, as against \$149,697,188 in 1905, a gain of \$11,335,534, or 7.57 per cent. The brick and tile products, the materials that enter most largely into structural and engineering arts, were valued at \$129,591,838, making 80.48 per cent. of the total; the value of the pottery, or finer grades of goods, was \$31,440,884, or 19.52 per cent of the total. In 1905 these percentages were 81.35 and 18.65 respectively, and practically the same relative proportions have been maintained by the two great branches of the industry for several years.

Every State and Territory of the Union contributes to the general wealth of the nation by the production of clay goods, although in Rhode Island and Nevada the number of producers was so small that publication of State totals would disclose the confidential information furnished by individual statements. The value of the products in 1906 is shown in the following table:

Value of clay products in 1906, by States and Territories.

State or Territory.	Brick and tile.	Pottery.	Total.
Alabama	\$1,650,903	\$37,996	\$1,688,899
Arizona	93,694		93,694
Arkansas	512,694	19,500	532,194
California	4,265,633	98,597	4,364,230
Colorado	1,784,005	47,083	1,831,088
Connecticut and Rhode Island..	1,613,761	a 133,444	1,747,205
Delaware	237,768		237,768
District of Columbia	335,139	(b)	335,139
Florida	289,644	(b)	289,644
Georgia	2,380,367	20,257	2,400,624
Idaho and Nevada	282,889		282,889
Illinois	11,651,278	982,903	12,634,181
Indiana	6,224,541	933,693	7,158,234
Ind. Territory ..	299,790		229,790
Iowa	3,411,027	58,000	3,469,027
Kansas	2,432,371	(b)	2,432,371
Kentucky	2,425,214	167,209	2,592,423
Louisiana	894,277	6,420	900,697
Maine	680,370	(b)	680,370
Maryland	1,763,040	373,499	2,136,539
Massachusetts ..	1,895,199	277,534	2,172,733
Michigan	1,793,367	51,110	1,844,477
Minnesota	1,603,279	(b)	1,603,279
Mississippi	831,769	19,311	851,080
Missouri	6,626,775	69,500	6,696,275
Montana	297,299	(b)	297,299
Nebraska	990,708		990,708
N. Hampshire ..	726,051	(b)	726,051
New Jersey	10,079,611	7,282,658	17,362,269
New Mexico ...	152,599		152,599
New York	12,008,260	1,868,347	13,876,607
N. Carolina	1,170,568	11,770	1,182,338
North Dakota ..	269,873		269,873
Ohio	17,023,806	13,990,359	31,014,165

Oklahoma	241,111		241,111
Oregon	506,192	(b)	506,192
Pennsylvania ...	19,363,794	2,410,817	21,774,611
S. Carolina	805,212	25,269	830,481
South Dakota ..	58,175		58,175
Tennessee	1,405,458	214,768	1,620,226
Texas	1,860,963	108,635	1,969,598
Utah	632,344	2,100	634,444
Vermont	112,368		112,368
Virginia	1,966,078	(b)	1,966,078
Washington	1,458,324	41,560	1,499,884
West Virginia ..	1,194,757	1,588,555	2,783,312
Wisconsin	1,215,172	12,170	1,227,342
Wyoming	74,321		74,321
Other States ...		587,820	587,820

Total	\$129,591,838	\$31,440,884	\$161,032,722
Per cent, total..	80.48	19.52	100.00

a Produced by Connecticut alone.

b Included in other States.

Statistics of the clay-working industries, prepared by Jefferson Middleton, are presented by the United States Geological Survey in an advance chapter from "Mineral Resources of the United States, Calendar Year, 1906," now ready for distribution.

RECEIVER FOR ZANESVILLE TILE COMPANY

The affairs of the Zanesville (Ohio) Tile Co., manufacturers of all kinds of flooring tile, and successor to the old J. B. Owens Pottery Co., Owens addition, Brighton, has been thrown into the hands of a receiver on application of H. L. Mooar, secretary and manager and a stockholder of the company. Attorney L. E. Dodd was appointed receiver by the court and he at once took charge of the company's business.

According to the petition, filed in common pleas court by Mr. Mooar, the liabilities of the company aggregate \$77,000. The assets will reach \$286,000, part of which, is not immediately available. Certain internal conditions in the company's business were mainly responsible for the action in court.

"The company is wholly solvent," said Receiver L. E. Dodd. "The company's general business is good; it has a quantity of manufactured goods, a large number of orders on hand, aggregating close onto \$10,000, and plenty of raw material."

The plant has not been closed down. Instead, application was made by the receiver for permission to continue the operation of the plant in the interest of the creditors, thereby preventing the heavy loss in different ways which would follow the closing down of the big plant.

Of the \$77,000 liabilities, \$36,000 is due, according to the petition. The petitioner says that he is personal security on two notes, held by the Irving National Bank of New York and amounting to \$17,000.

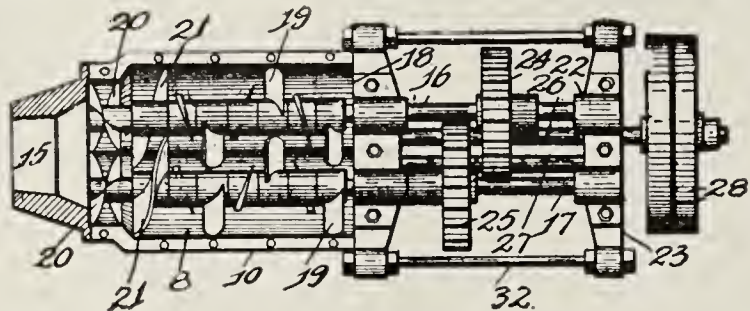
The officers of the Zanesville Tile Co. are: J. B. Owens, president; F. G. Dodd, vice-president; H. L. Mooar, secretary, and J. M. McCracken, treasurer. The company has been operating the plant of the old pottery company and has been manufacturing all kinds of flooring, mantel and wainscoating tile.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

868,355. Brick-Machine. Friedrich Mueller, St. Louis Mo. Filed Jan. 22, 1906. Serial No. 297,330.

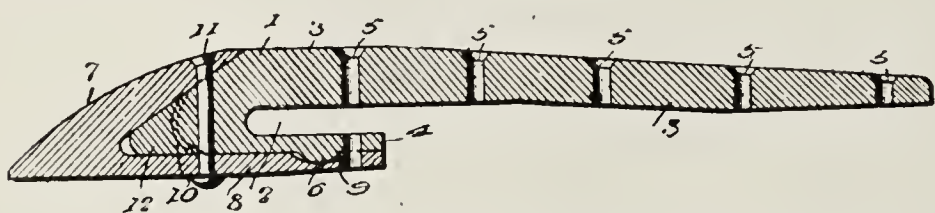
A brick machine comprising a casing, a die at the forward end of the casing, a pair of shafts extending into the casing, a double conveyer located on the end of each shaft and contacting with the die to press the plastic clay into and through the die, a second single conveyer located upon each shaft at the rear of the forward conveyer to assist in the feeding of the plastic clay, and a plurality of agitators located



upon the shaft to the rear of the last mentioned conveyer for agitating the clay, a gear wheel located upon each of said shafts, a drive shaft, a counter-shaft, a pair of gear pinions located upon the drive shaft, and a gear pinion located upon the counter-shaft, said gear pinions meshing with and operating the gear wheels to revolve the conveyers and agitators in opposite direction, substantially as specified.

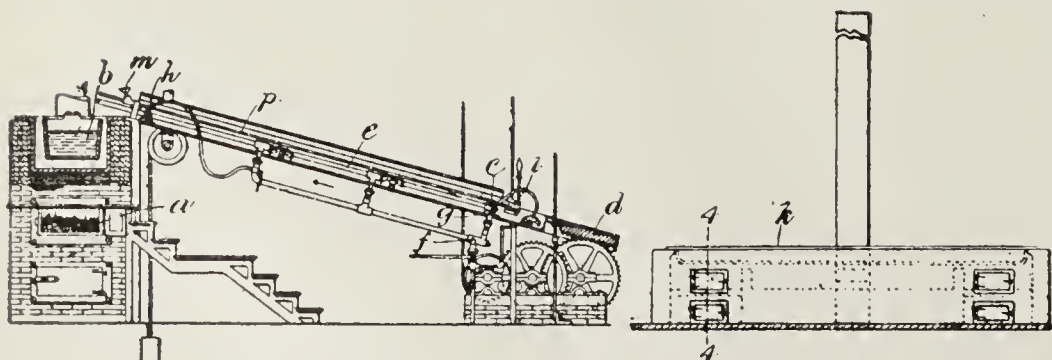
868,066. Tooth for Excavating-Dippers. Harry J. Barnhart, Marion, Ohio, assignor to The Marion Steam Shovel Company, Marion, Ohio, a Corporation of Ohio. Filed Mar. 19, 1907. Serial No. 363,262.

A tooth of the character described comprising a body portion having a projection on one side thereof, and a cutting point adapted to be secured to said body portion and having a recess adapted to receive said projection.



A tooth of the character described comprising a body portion having a projection on one side thereof and having its forward end reduced, a cutting point having a recess adapted to receive the forward end of said body portion and provided with projections extending on either side of said reduced portion, and having a second recess adapted to receive the projection on said body portion.

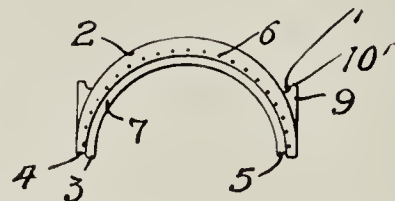
868,418. Method of Making Composite Pipe. Thomas E. Dwyer, Wakefield, Mass. Filed June 16, 1905. Serial No. 265,513.



The method of making composite non-corrodible pipe a primary tube of relatively-refractory corrodible material which consists in uniting a non-corrodible metallic lining to by coating and heating the primary tube in a bath of molten

material, placing the primary tube over a mandrel, pouring molten non-corrodible metal having a lower melting point than that of the metal from which the primary tube is made into the space between the mandrel and tube while the primary tube is still hot, and cooling the tube.

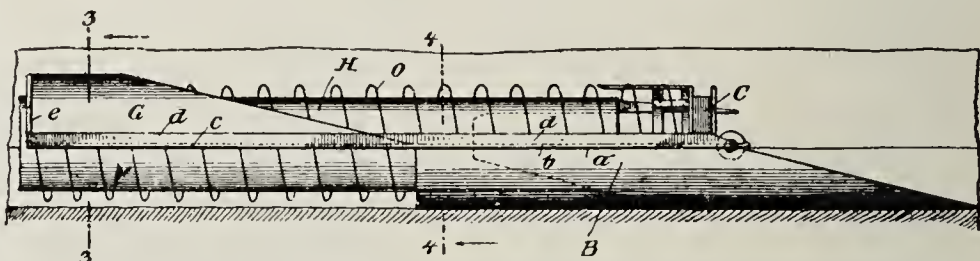
867,945. Drain-Tile. William H. Carson, Madison, Minn. Filed Feb. 18, 1907. Serial No. 357,841.



A composition tile comprising two longitudinally divided sections of equal size, each section having a longitudinally arranged tongue and an adjoining flat surface on one edge, and a longitudinally arranged recess and a flat surface on the other edge, said tongue and recess being oppositely arranged on the sections of each tile, whereby the edges of the tile will interlock when placed together, substantially as described.

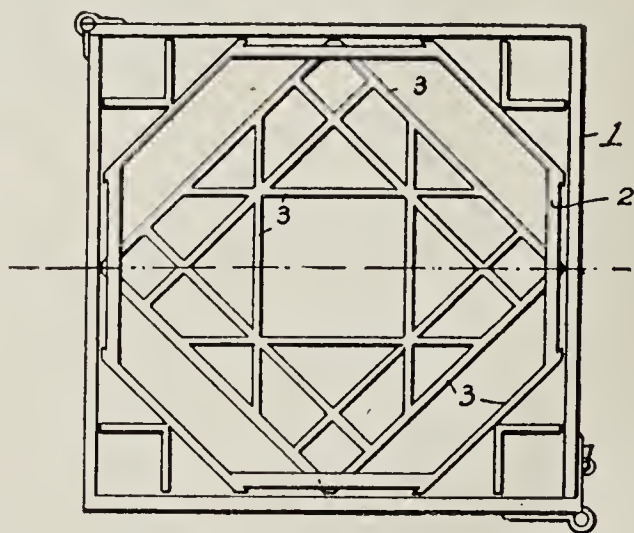
868,007. Means for Molding Pipes. Ernest L. Ransome, New York, N. Y. Filed June 13, 1906. Serial No. 321,569. Renewed Apr. 26, 1907. Serial No. 370,375.

An apparatus for forming concrete pipes in trenches, having a cap or top mold section and means for supporting the same against the wall or walls of the trench at one or both



sides of the mold section, to permit said mold section to slide on said supporting means horizontally through the trench, as the construction of the pipe advances, whereby an unobstructed space is left under the mold section facilitating the formation of the pipe and a means adapted to precede the mold section and serving to introduce a reinforcing member into the pipe as the same is formed in the said unobstructed space beneath the mold section.

868,261. Process of Making Tiles. Constantinos H. Geanakopulos, Reading, Pa. Filed May 4, 1907. Serial No. 371,893.

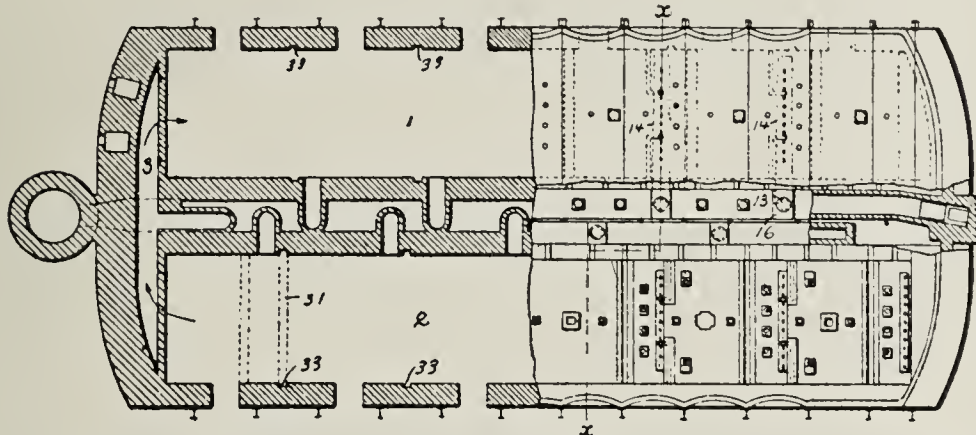


The process of making tile sections of varied colors, consisting of placing a removable form comprising a series of joined partitions in a mold, partially filling the spaces between said partitions with a mixture of high grade colored cement and sand, removing the form from the mold filling the mold with a mixture of sand and cement of inferior quality, subjecting the whole to severe pressure, applying to the face of said section a coating of specially prepared dressing composed of beeswax, linseed oil and alcohol and drying by air.

868,059. Tunnel-Kiln. Peter L. Youngren, Milwaukee, Wis. Filed July 18, 1905. Serial No. 270,247.

In a kiln a temporary partition wall, composed of green brick arranged in solid courses with an angular pitch in opposite directions on opposite sides of a center line.

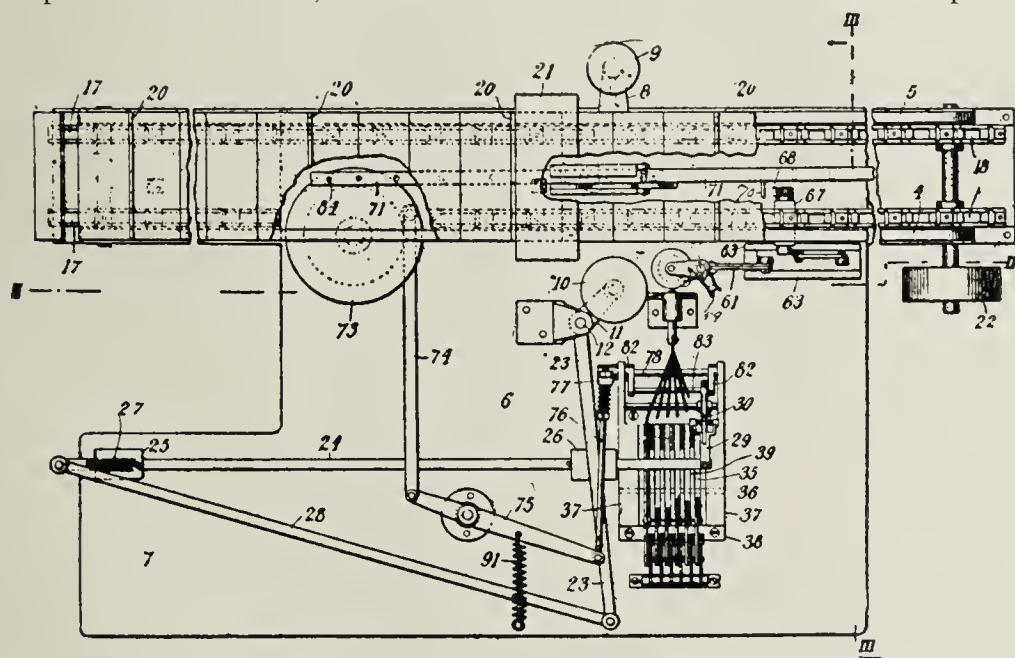
In a kiln a temporary partition wall composed of green bricks arranged with an angular pitch longitudinally of the wall; in combination with a top wall having a series of gas inlet flues adapted to deliver combustible gas into the air adjacent to the temporary partition wall, and means for inducing a draft past said flues and over the wall, together



with a set of auxiliary inlet flues leading downwardly in and along the side walls of the kilns to inlet apertures at the sides thereof; together with a second temporary partition wall extending downwardly from the top portion of the kiln in the rear of the first mentioned partition wall, to points near the bottom thereof and supported upon bricks having passages for the air and gases of combustion deflected downwardly by such wall.

868,793. Tile-Gaging Machine. Max A. Metzner, Perth Amboy, N. J., assignor of one-half to The C. Pardee Works, Perth Amboy, N. J., a Corporation of New Jersey. Filed Jan. 29, 1906. Serial No. 298,319.

In a machine for measuring tiles, the combination of gaging means for the tiles a longitudinally adjustable printing wheel, a plurality of stops adapted to be projected into the path of the wheel, a series of levers connected with the stops

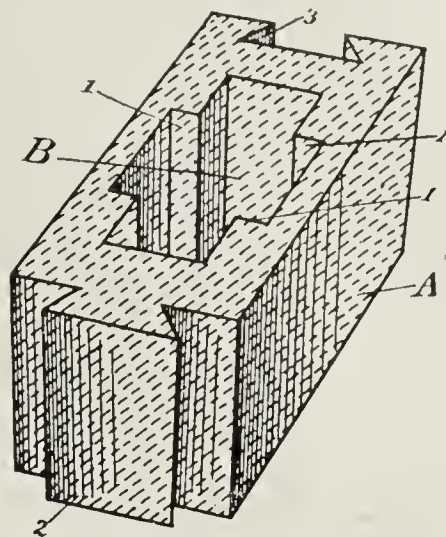


to project the same, said levers being arranged parallel with each other on a common fulcrum, a tappet adjustable under control of the gaging means transversely across one end of the said series of levers, and means for actuating the tappet to actuate a selected lever, as set forth.

868,838. Concrete Building-Block. Henry S. Brewington, Baltimore, Md. Filed Dec. 28, 1906. Serial No. 349,797.

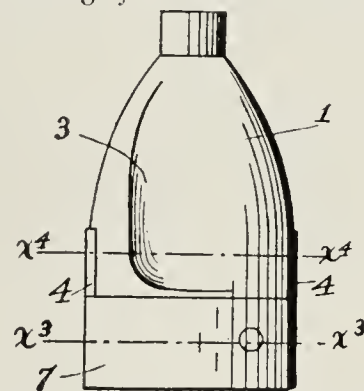
The combination of a hollow concrete building block, comprising a Maltese cross-arm shaped extension on one end thereof and a similar shaped groove in the opposite end, of transverse cross bars on the bottom side of the said block near each respective end portion, and adapted to fit into the hollow portions of two adjacent blocks when placed on top

thereof, thereby relieving the strain on the locking device on the ends of the two said under blocks, substantially as described.



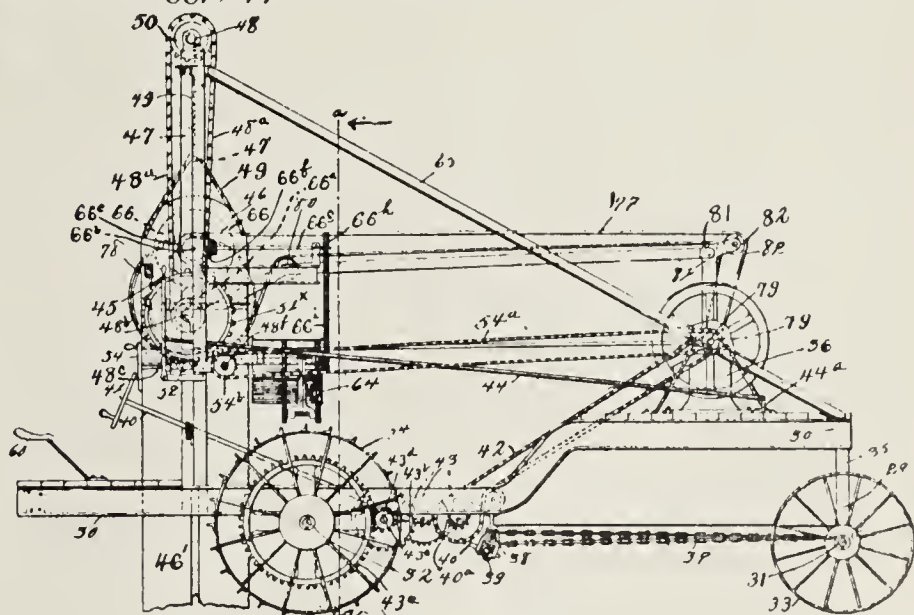
868,866. Plunger for Tile-Machines. George F. Keil, Sherburn, Minn. assignor of one-half to Christian F. Mickelson, Sherburn, Minn. Filed Apr. 29, 1907. Serial No. 370,950.

The combination with a hollow plunger head 1 having the pockets 3, of the detachable hard metal wearing plates 4 set into said plunger or head at points where the lower portions of said pockets 3 join the external surface of said



plunger or head, and at which points the greatest wear takes place, the hard metal follower ring 7 detachably and adjustably applied around the lower end portion of said plunger or head 1, said ring being cut at 8, and nutted bolts, adjustably securing said follower ring to said plunger, substantially as described.

868,937. Tile-Ditching Machine. Micajah L. Poulter, and Marion J. Munson, Stockport, Iowa. Filed Oct. 8, 1906. Serial No. 337,877.



In a ditching machine, the combination with a framework, a carrier supported upon said framework, of a scoop secured to said carrier, said scoop provided with a slot formed in its side and extending its entire length and said slot open at both ends, and means carried by said framework and adapted to be positioned within the slot of said scoop for cleaning the inside thereof, and means for driving said carrier.

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Vol. XXXI.

NOVEMBER 30, 1907.

No. 10

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay Workers' Association will be held at Milwaukee, February 12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ills., Jan. 14-15 and 16th 1908. Headquarters at the National Hotel.

Human nature with a safety brake attachment is an excellent thing.

No matter how much a man dislikes a creditor he is apt to ask him to call again.

If a man shoots putty balls at an enemy he need not be surprised if they come back as cobble stones later.

A man may think he is having a good time when he is killing time, but sooner or later time will get even by killing him.

Subscribe for the CLAY RECORD today. You can have it until 1909 for One Dollar, twenty-six issues. The only clay journal in America that is printed twice a month.

These are times when one should watch their advertising and if possible increase it in every direction that they can. He that keeps at it will find the worms like the early bird.

The entire brick product of the state of Illinois last year was valued only half as much as the product of a big Pennsylvania brewing concern. This is not surprising when we reflect that few if any people drink brick.

A NEW RATE ON BRICK AFTER DECEMBER

Shippers of brick in the Columbus, O., district, have been notified that the Central Freight Association has made a rate on all classes of brick from Chicago to New York of 22½ cents, effective Jan. 1. The new rate has been made by reason of the complaints of shippers since the single classification of brick has been established. Just what effect the putting into effect of the new rate will have on cases now pending before the interstate commerce commission is not known, but it is believed that shippers will consider the rate as still too high.

NEW YORK BRICK MARKET TAKES A DECIDED SLUMP

Brick manufacturers consider their trade in an unpleasant position. Demand has fallen off about half, arrivals are few and there is a surplus in the market. The price for good brick is nominally \$6 per thousand, but in order to get rid of waiting cargoes, that price is being shaded.

"I think the condition of our trade is worse than it was in 1893," said President Hammond, of the Hudson River Brick Manufacturers' Association. "The adverse conditions seem more acute to us, at any rate, because when the panic of 1893 set in brick was being made on a low cost basis, and had been for a long period, so that the depression did not carry the severe effects of the present state of financial affairs, when manufacturing costs have been raised to a high level."

OBITUARY

Harry Walker, a well-known Trenton, N. J. potter, died of heart trouble while en route to a hospital for treatment.

John M. Freeman, pioneer in the fire-clay industry of the Ohio Valley and a resident of Toronto, Ohio, for many years, died at his home, aged eighty-three years.

H. B. Camp, one of the foremost clay manufacturers in America and a capitalist, died at Akron, Ohio, of heart trouble. He made a fortune in sewerpipe and other clay products manufacture.

R. A. Brown, the largest brick manufacturer and one of the wealthiest men in North Carolina, died at his home in Concord, after a long illness. He was sixty years of age. A widow and four children survive.

Samuel C. Walker, president of the Harbison-Walker Refractories Co., Pittsburgh, Pa., one of the largest brick manufacturing concerns in this country, died at his home at Shields, a suburb of Pittsburgh. He was fifty-nine years of age and a widower. He was a director of many banks and other institutions.

John H. Henderson, of Dover, N. H., engaged in the brick manufacturing business at Dover Point for the past twenty-two years, died at his home, 163 Central Avenue. He leaves a widow and one son. He was a partner of Charles H. Morang.

FIRE! FIRE! FIRE!

Fire did considerable damage at Edward Schusler's brick works, 276 Weiss St., Buffalo, N. Y., destroying the buildings at the kilns and doing other damage.

The Fultonham Brick Co. suffered a small loss by fire at its plant in Axline, Ohio. The oil house and contents were fully destroyed.

The Carlton West Potteries, Toronto Junction, Ontario, were destroyed by fire causing a loss of \$5,500; only \$1,500 insurance.

The brick works owned by George E. Anders & Bro., 1745 Westwood Ave., Cincinnati, Ohio, was badly damaged by fire.

The Bippus Tile Co., Bippus, Ind., was completely destroyed by fire causing a loss of \$20,000. The officers are: J. W. McCollin, president; W. McKnight, treasurer and M. G. Wright, secretary. The plant was thoroughly up-to-date and will probably be rebuilt.

WILL LOSE HIS POLITICAL JOB

L. B. Cooke, state examiner into municipal affairs, has virtually ousted Councilman O. H. O'Dell from office by his recent report of municipal affairs, at Lima, Ohio. Mr. Cooke has learned that Councilman O'Dell is a member and director of the Superior Brick Company, from which the city has purchased brick. Mr. Cooke has cited section 45, of the municipal code and asks the removal of Mr. O'Dell at once. The code section cited is explicit and leave but two avenues open for O'Dell, who has been a big factor in municipal affairs, one being to resign at once, and the other to await the request for his resignation by Mayor Robb, who will send a communication to the council next Monday. Under the statutes the councilman is disqualified from retaining his office.

ACCIDENTS, DAMAGES AND LOSSES

Creditors ask for a receiver for the Ritz Brick Co., Sergeant Bluff, Ia. The liabilities are about \$10,000.

Harry Preston, superintendent of the Seward (Pa.) Brick Co., sustained a painful injury while helping some of his men at the plant.

The Enterprise Brick Co., Duluth, Minn., had a verdict of \$664 given against them for machinery. Judgment was rendered for that amount.

The Kingsland (N. J.) Brick Co., 52 Nassau St., New York, in their schedule in bankruptcy show liabilities of \$101,008, and assets \$5,840.

Emory Graham, superintendent of the Tempest Brick Co., at Manown, near Pittsburg, Pa., was probably fatally injured by being caught in a belt which he was adjusting.

L. W. Servey has filed a claim of damages for \$15,000 against the Sandstone Brick Co., Schenectady, N. Y., for the death of his son who was killed by an explosion of a cylinder.

The Zanesville (O.) Tile Co., successor to the J. B. Owens Pottery Co., is in the hands of a receiver. The liabilities of the company are only \$77,000, while the assets are \$286,000.

Andrew Peterman, of Fredericksburg, O., and E. R. Hammond, of Pittsburg, have been appointed receivers of the Fredericksburg (O.) Brick, Coal & Clay Co. The plant was completed three years ago but has never operated owing to disputes between the promoters.

An order has been issued to show cause why the Aberdeen (So. Dak.) Brick Co. should not have a receiver appointed. The company is capitalized at \$25,000, one-half of which is held by L. Lager and wife, balance by citizens of the town.

The Peerless Brick Machine Co., of Minneapolis, Minn., has been granted an injunction restraining the Miracle Pressed Brick Co. from further infringing upon a patent concrete brick-making machine, also to determine the amount of the damages.

THREE UNIONS IN CONFLICT OVER THE SIZE OF A BRICK

The Bricklayers' union, not satisfied with the description commonly given a molded block of clay, either sun-dried or burned, known as a brick, has undertaken to make a more explicit definition. For that purpose the bricklayers, tile setters, and stone masons yesterday commenced a conference in the headquarters of the Associated Building Trades.

An American brick, size 2x4x8 and weighing four pounds, passed as being the kind over which no dispute could arise. The Roman brick, size 1½x2x4x10 and weighing about four pounds, is in doubt. The tile setters want it in their branch of the business and the bricklayers insist that it is a part of their trade to set the Roman brick.

The large vitrified brick, size 4x4x8 and weighing over ten pounds, are claimed by the stone masons as being in their class of material, and therefore to be placed in the walls by the stone masons only.

THE BICKFORD BRICK CO. BUYS FIRE-BRICK PLANT

At a trustees' sale in bankruptcy held in the arbitration room in the court house at Clearfield, Pa., the Bickford Fire Brick Company, of Lock Haven, Pa., came into possession of all the property of the Curwensville Fire Brick company at Curwensville, Pa.

This purchase includes a large and completely equipped Fire Brick plant with all necessary buildings, machinery, boilers, engines, twenty-three kilns, stock shed, tramway, tools and fixtures necessary for the operation of the plant. It also includes several hundred acres of coal and clay lands as well as the right, title and interest of the Curwensville Fire Brick company in articles of agreement and leases held on coal, clay and mining rights on many hundreds more acres in close proximity to this plant, as also a large tract of land in Union County.

The purchase also includes a quarter of a million of building brick and a million furnace brick now in the storage sheds.

In addition to their purchase the Bickford Fire Brick company are the owners of several thousand acres of coal and fire clay lands which they had purchased a year or more ago when they contemplated erecting a new works at or near DuBois, which said lands are several miles nearer the Curwensville works than they would have been to DuBois. The purchase price of the Curwensville plant and belongings was \$175,000.

It is the intention of the Bickford company to make some additions, changes and improvements as soon as the sale is confirmed, but pending these improvements the works will be started which now has a capacity of 50,000 brick per day.

James A. Bickford, president and general manager of the Bickford Fire Brick company, stated that they could have the title of the purchased property conveyed in about ten days and by the middle of December the plant could be gotten in shape to start up.

When the improvements contemplated are made, this will be the finest, best equipped and backed up by the greatest body of raw material of any fire brick plant in Pennsylvania.

READSBORO MAN MAKES ALUMINUM FROM CLAY

An interesting project for developing aluminum from clay at Montague City, Mass., is reported at Montague City, where W. C. Davis of Readsboro, has secured options on the Burnham Brothers' brick yard, with land of 50 acres, and also on a place of 12 acres belonging to C. P. Wise.

Mr. Davis states that he has a secret process, which he has patented, for making a much harder type of aluminum than has heretofore been made, and that after trying the clay of about 200 yards, he has concluded that that at Montague City is best. He says this process came to him accidentally, and that only his wife and he know it. The price rumored to have been paid for the Burnham Brothers' brick yard is \$35,000. He has been experimenting at Readsboro, and as is announced will soon begin work here. It is not known what the plans are for conducting the brick yard, which it is expected will run along as it has. Mr. Davis has had mining interest about here for a number of years.

JUDGE REFUSES TO APPOINT A RECEIVER

Judge Vinson Carter, Superior Court, Indianapolis, Ind., refused to appoint a receiver for the Indianapolis Composite Brick Company, on petition of Henry W. Culbertson, former factory superintendent for the concern. Mr. Culbertson alleged that he had taken twenty-one shares, of the par value of \$50, of the stock of the company, with the understanding that, if he should be dismissed as superintendent, the value of his stock should be returned to him. The financial situation caused the company to close, temporarily, a short time ago. Culbertson then asked the officers of the company to return his stock subscription money, and to pay him his back salary. The salary was paid, but the stock money was not paid. Culbertson then brought suit for a receiver for the company, alleging that it was in danger of becoming insolvent. In court the officers of the company showed its affairs to be on a sound basis, and said work would be resumed as soon as financial conditions warranted such resumption. On this showing, Judge Carter refused to grant the petition for a receiver.

BRITISH ARMY OFFICER NOW SHOVELS CLAY

Relinquishing his position as the pampered and toasted pet of English society for a position as day laborer, Capt. Glen Collins, casting aside his regimentals, worn with honor in the British Soudan and in the Boer war, has donned overalls and jumper, and is at present engaged in shoveling coarse clay at the Grueby Faience Pottery Company Works in South Boston, Mass.

"It is a very good plan and by the way Capt. Collins has taken hold, he has every assurance of success"

This was the statement of W. I. Whitmore, superintendent of the Grueby Faience Pottery Company when asked what he thought of the former society pet and British army officer.

Capt. Collins has started to work from "the bottom up" in the pottery concern. His duties for the present consist of shoveling clay and handling the huge molds which later are baked and turned out as tiles for building fronts or in stanch blocks for the structure of fire-proof sky-scrapers.

Treasurer William Graves of the concern when asked his opinion said that it was nothing uncommon at all, and that all college graduates along engineering lines, if they wish to make a success, must enter the trenches and do the practical work.

"It is the only way in which a person can learn this business," said he.

The somewhat unusual move on the part of the divorced husband of attractive Nathalie Schenck, of Newport and New York, was not made without due consideration. It was finally arranged, upon the advice of an old friend of his family, and with the full consent of his father, Capt. A. Glen Collins, of the famous "Black Watch" regiment of Scotch fame, that he should learn the pottery business. His father has assured him that if he sticks to the business for a year and shows an aptitude for it, he will invest money with the firm, that his son may share in the company's profits.

THEY WANT A BUSINESS MOTTO

St. Louis, Mo., November 27, 1907.

Mr. George Hartwell, Plymouth Building, Chicago, Ill.

Dear friend Hartwell: In working out our organization we seem to have overlooked a rather important factor of our business, and that is, a business motto, and in talking over the matter with our officers, we thought it best to give the brick manufacturer and engineer an opportunity to make suggestions.

We therefore wish to offer a prize of \$20 to the one who will furnish us the best motto, to be applied to an engineering company such as ours. The length of the motto must not be over twenty-five words, and we would prefer some standard quotation from a recognized author.

Will ask you to publish this letter, so that parties will write us direct. Any suggestions will be considered up to January 1st. An announcement will be made in the Convention number, giving the name of the winner.

With kindest wishes, we are,

Yours very truly,

LUCE ENGINEERING CO.

Peter B. Gibson, Secretary and Treasurer.

PROMOTOR FLOWER HELD ON NEW CHARGE

Another warrant was issued the 27th, for Dr. R. C. Flower, the promoter, who jumped \$23,000 bail rather than face swindling charges in New York and subsequently formed the Virginia Clay and Material Company to float stock in his "secret Persian process" for making brick.

It was served on Flower immediately after he had waived a hearing before Alderman Koch, in Reading, Pa., and had been remanded to jail in default of \$3,000 bail on charges preferred several weeks ago by Dr. Charles B. Dotterer, of Boyertown, president of the "secret process" company.

Harry R. Leimbach, who made the additional charge, is one of a number of Berks county business men who say that Flower has separated them from their good dollars by representing that the great "Persian secret" brickmaking method would pile up fortunes for them.

Technically, Leimbach in his complaint, charged that Flower had obtained \$2,000 from him by false pretense. Magistrate Koch fixed the bail in the new case at \$1,500.

Throughout the proceedings Flower wore a look of entire contentment. No one would have thought, so care-free did he appear, that he had been making a desperate legal battle since last January against being extradited from New York.

Flower was brought from the jail where he has been confined in a cell since he was arrested by Constable Miles, of Reading.

Many stockholders of the Virginia Clay and Material Company, who live in Boyertown, and whose dreams of getting fortunes through the Persian secret brick have had a rude awakening, went to the hearing. Among them were Charles E. Renninger, a merchant, and Harry Leimbach, an insurance agent, who became one of Flowers' stock salesmen. Charles Spatz, an ex-member of the legislature and proprietor of the Berks County Democrat, was a witness.

SIMONS WILL GO INTO THE PAVING BRICK INDUSTRY

Joseph Simons, Los Angeles, Cal.'s largest brick maker, is preparing to go into the paving brick business. The Simons Brick Company sees an opening, and if Mr. Simons' plans do not go astray, there will be two paving brick companies in the field next year.

Only one company is furnishing paving brick in Los Angeles. In spite of the lack of competition, the price of brick is little, if any higher, than it is in the east. The average price is about \$17. In the east it ranges from \$12.50 to \$18. Mr. Simons recently returned from a trip east which he took to look up new wrinkles in the brick business. He finds that there is little new to learn. A good paving brick is made here, and the price is fair, according to members of the board of public works.

Practically the only fly in the ointment in this section is that paving brick clay must be mixed with another ingredient. This is the clay that is found at Elsinore. Extensive clay banks are found at Santa Monica. Both the Simons and the Los Angeles brick companies have heavy deposits at the shore. The latter manufactures its paving brick near the deposits. Mr. Simons proposes to utilize his great yard in Simonsville. This will obviate hauling the finished product from the seashore.

A. A. Hubbard, the brick man of the board of public works, estimates that, with competition in the field, the price of paving brick will fall to \$15. This year the Los Angeles Pressed Brick company probably furnished 6,000,000 brick. The cost falls entirely upon property owners, who pay for street paving under the Vrooman act. The close of the year will see seventy miles of streets paved for 1906 and 1907. Down to Nov. 1, 1906, thirty-four miles of streets were paved. Since that date, ordinances covering thirty-six miles of streets were passed by the council. Several contracts are being held up on account of lack of brick. The holidays have interfered with awarding other contracts. These improvements probably will go over to next year. The most important are about four miles on Sunset boulevard, Aliso street, San Fernando street, Vermont avenue and intersecting streets between Figueroa and Pico streets.

It is probable, therefore, that there will be many brick wanted for next year's work. Based on this year's record in paving, contracts for 1908 ought to aggregate nearly as many miles.

A READING MAN GIVES IT STRAIGHT

J. Harry Moyer, of the firm of Moyer & Co., brick manufacturers, 725 Penn street, Reading, in discussing business, said: "People who have money today are the ones who have always had it. The ones that are all the while saying that a panic is coming, or that money is scarce, never had any money and do not have any to-day. Our bills are paid more readily now than ever before. Our debtors are paying cash, and checks very seldom pass through our hands. The orders are coming in faster than we can fill them, and collections are excellent. I have no fear of a panic, and no one else would if they would attend to their own business and let the money take care of itself."

CLAYS OF CENTRAL GEORGIA

The occurrence of white clays in central Georgia has been known for many years, but the quality and extent of the deposits and their availability for use as the basis of large industries are being but slowly recognized.

The clay area extends from northeast to southwest entirely across the State, along what is called the "Fall Line"—where the streams of the region tumble from the uplands to the coastal plain. In width it ranges from a strip only a few miles wide between Bacon and Columbus to a zone about 30 miles wide in a north-south direction just west of Macon and near Fort Valley.

The clays vary from the purest, softest, flourlike kaolin to the hardest, refractory, flint fire clay, and the beds are from 6 to 35 feet thick. The kaolins are adapted for use in the manufacture of porcelain, sanitary ware, encaustic tiling, etc., and the fire clays are suitable for high grade fire brick and other uses.

In order to point out the extent, quality, and accessibility of these Georgia clays, descriptions of many localities at which they occur and analyses of the products of various mines are included in a paper in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin No. 315). Copies of this report are ready for distribution. The paper, prepared by Mr. Otto Veatch, is intended to be suggestive merely and is neither exhaustive nor final.

The only industries in this region that now utilize these clays are two plants which manufacture fire brick and a small pottery recently established at Augusta, Ga., for the manufacture of porcelain. Clay mining is carried on at several places, and the product is shipped to fire brick and terra-cotta manufacturers, to Ohio and New Jersey potteries, and to northern paper mills. About 25,000 tons are mined and shipped annually. No washing plants are installed at any of the mines, the clay being shipped in the crude state. The installation of washing plants and steam shovels will materially increase the profits made in mining these clays. The enormous profits that may accrue from other forms of mining are not to be expected in the clay industry, but by economical management and by properly handling the material a reasonable return on an investment can be obtained.

OPERATIONS OF THE DRAINAGE BOARD

The drainage board and the National Brick Company, Chicago, have entered into an agreement as to the right of way of the north shore auxiliary channel, which passes through the land of the latter company. The brick company has given to the sanitary district twenty-four of the sixty acres which it owns on the east line of the township of Niles, extending from Tuohy and Howard avenues on the north, valued at about \$70,000. The brick company will excavate the channel through this land and will receive in consideration for the land and the excavating all of the clay from Pratt avenue, about four and one-half miles, to the Northwestern railway. It is to be taken out at the rate of 100,000 cubic yards annually. No money entered into the transaction. It is believed the agreement is equitable to all parties concerned.

THE RAYMOND 1908 CALENDARS

The C. W. Raymond Company, high-grade clay machinery manufacturers at Dayton, Ohio, have just issued or distributed a set of 1908 calendars that are as fine as any heretofore presented to the CLAY RECORD, and deserve a place in the home of any clayworker. The subjects are: "The American Princess;" "Our Matinee Girl;" "Nothing Doin'" and "Our National Flower." It would be a pretty good judge to decide which are the best.

Only a limited number of these calendars have been sent out. If you have been overlooked, by writing the firm and give them information as to your clay plant they will send you one of your choice.

BRAZIL PLANTS LAY OFF MEN FOR LACK OF CASH

On account of the inability to secure the cash with which to pay off their employees, the Sheridan Brick Works has been shut down until the money situation becomes easier. The Brazil Clay company has laid off part of their force, and the Hydraulic Press Brick company has reduced their working time to eight hours and a half a day on Saturdays. The report that the Crawford & McCrimmon company had laid off half their employees in the foundry and machine shops is without foundation, as the plant is working full time.

PRODUCTION OF GOLD AND SILVER IN THE UNITED STATES IN 1906

The production of gold and silver in the United States in 1906 is shown in the following table in approximate distribution by states and territories. These figures are the result of conference and adjustment between the Bureau of the Mint and the Geological Survey, and are accepted as final by the two bureaus. The data as represented in this table are ascertained from the bullion deposits in the United States mints and assay offices and by statements from the smelting and refining establishments. It shows in brief the amount of the precious metals refined during the year. The production of gold in the United States during 1906 was \$94,373,800 as against \$88,180,700 for 1905, a gain in 1906 of \$6,193,100. The principal gain was in Alaska, which amounted to \$6,439,500. Nevada's gain in gold was \$3,919,500, Oregon's \$75,200, Arizona's \$55,800.

The greatest loss in gold production in any state was in Colorado, where there was a decrease of \$2,766,700. The next largest loss was in Montana, \$367,300. California lost \$364,200, South Dakota \$309,000, Washington \$267,000, Idaho \$39,900, North Carolina \$33,000, South Carolina \$20,500, and Wyoming \$18,000. There was also a loss in Georgia.

The total production of silver in the United States during 1906 is given as 56,517,900 fine ounces, of the commercial value of \$38,256,400, as against 56,101,600 fine ounces, of the commercial value of \$34,221,976 in 1905. The net gain in the production of silver over that of 1905 was 416,300 ounces. There was an increase in the production of silver during 1906 in Arizona of 363,500 ounces, California 435,500 ounces, Idaho 710,600 ounces, and in Utah 1,168,200 ounces.

The greatest loss in the production of silver during the year was in Montana, amounting to 914,400 ounces, and in Colorado of 495,400 ounces. The average price of silver for the calendar year 1905 was \$0.61027 per ounce, as against \$0.67531 for the calendar year 1906.

SAND OR LIME BRICK OR BLOCK NEWS

The Sibley (Mich.) Brick Co. has shut down its plant for the season, after making a very profitable run.

The Owensboro (Ky.) Sand-Lime Brick Co. has closed its plant for the winter; the money stringency is partly accountable for this.

R. H. Graham, Smithville, Tex., is considering the building of a sand-lime brick plant with 20,000 daily capacity, and wants estimates on same.

It is practically settled that the Diamond Stone Brick Co., Wilmington, Del., will establish a branch plant in Connecticut and probably in New London.

The Luverne (Minn.) Pressed Brick Co., a sand-lime brick concern, is now ready to operate its plant. Prospects are splendid for a paying proposition.

The Granite Brick Co., of Columbus, Ohio, will have open doors during the stay of the members of the National Association of Manufacturers of sand-lime products at Columbus, Ohio.

The Progress Brick Co., Schenectady, N. Y., has been incorporated with \$35,000 capital stock. Incorporators are: E. W. B. Schoradt, Paul Schmidt, and Joseph Gritzbank, of Schenectady, and several others.

The Composite Brick & Tile Co., Oklahoma City, Okla., has been incorporated with \$250,000 capital stock. Incorporators are: R. E. Brownell, Clark Braden, W. C. Burke, C. E. Johnson, and Charles W. Jones.

The Pocomoke Perfect Brick Co., Cape Charles, Va., incorporated with J. T. Daniel, president, J. R. Parson, treasurer, and J. P. Butler, secretary, will erect a two-mill plant costing \$40,000, and want sand-lime brick machinery.

The Ohio Valley Concrete & Building Co., Parkersburg, W. Va., has been incorporated with \$25,000 capital stock to manufacture building blocks, tiles, etc., of sand and cement. H. V. Reese, C. T. Parks, F. A. Parrish and others are interested.

The Sioux Falls (S. Dak.) Pressed Brick Co. has a capacity of 3,500,000 sand-lime brick per annum, and has had an unbroken record of prosperity. The officers are: B. Stevenson, president; Edward Johnson, vice-president, and A. J. Johnson, secretary and treasurer.

A number of El Reno (Okla.) business men have organized a \$100,000 company to erect a large factory for the manufacture of building blocks, drain tile, sewer pipe, etc., out of cement. They expect to supply the needs of Oklahoma, Texas, Arkansas and other states.

T. M. Ferguson, R. H. Sharp, C. W. Herb, A. F. Emminger and Michael Leslein, a majority of the members of the directors of the Sharp Sand-Lime Brick Co., of Columbus, Ohio, have called a meeting to dissolve the corporation. The plant in the Hocking Valley has been transferred to another company.

The Wilkes-Barre Cement Brick Co. has been organized with \$100,000 capital stock at Wilkesbarre, Pa. The following officers are elected: R. A. Reed, president; J. E. McKeown, vice-president; Lewis Becker, treasurer; George Russell, secretary and general manager. They will manufacture brick in the building at Delaware and North Pennsylvania avenues.

POTTERY NEWS ITEMS

The Camden (N. J.) Pottery Co., has been incorporated with \$200,000 capital stock. The incorporators are Murrell Dobbins, T. M. Dobbins and Geo. W. Jessup.

The Allison Pottery, at Holly Springs, Miss., is turning out jugs, crocks, etc., and is rushed with orders at the present time.

The Dunlop & List Pottery Co., Matawan, N. J., has been incorporated with \$20,000 capital stock. Incorporators are Edward L. Lisk, W. H. K. Dunlop and Florence Tofts.

The Ceramic Supply Co., Wheeling, W. Va., has been incorporated with \$50,000 capital stock by C. W. Franzheim, John H. Taylor, H. A. McNichol, A. M. Maddox and others.

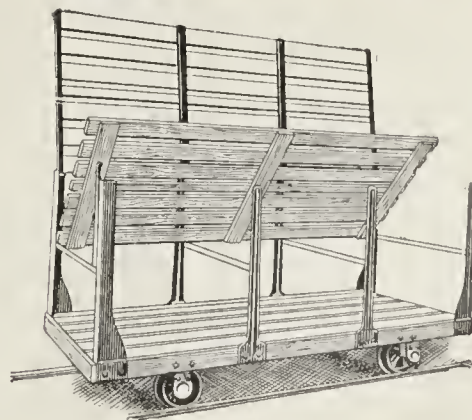
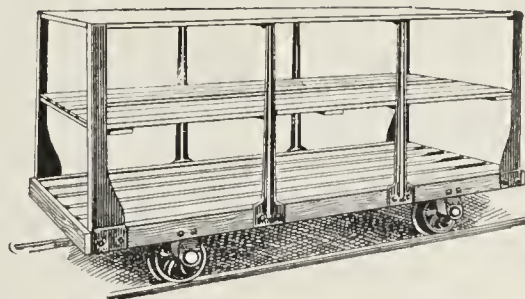
The Kirkwood Pottery Co., Roseville, Ohio, has been incorporated with \$15,000 capital stock by A. P. Clark and W. E. Worstall, of Zanesville, and J. S. Miller, W. S. and C. S. Meyers, of Roseville.

The Marshalltown (Iowa) Pottery, which has been closed for some time will be reopened and a new clay found near Hickory will be used and enameled ware will be produced. John Martin is the superintendent.

The Brockman Pottery Co., Cincinnati, O., has been incorporated with \$75,000 capital stock by C. F. Brockman, L. E. Brockman, Edward A. Brockman, Frank Heyner and J. D. Breed. They will enlarge the Brockman Pottery on Richmond street.

The Lightest Running Dryer Car Made

having a dust proof roller bearing
box made of steel. No oil needed.
Write for description and prices



Vulcan Iron Works

MASON CITY,
IOWA

MISCELLANEOUS ITEMS

G. T. Taylor, Gabbettville, Ga., is in the market for brick making machinery.

The Schuster (Ala.) Brick Co., with its new equipment is turning out 35,000 brick per day.

Frauenthal & Robinson, Heber, Ark., put in a hand brick yard in September, but will equip it with machinery by the time to open in the spring.

The Pittsburg (Kansas) Sewer Pipe & Conduit Co., will add more kilns to their plant so as to increase the capacity and take care of the trade.

The Dedier-March Brick Works at Weber, Middlesex Co., N. J. have laid off some of their men so that certain parts of their plant can be overhauled.

After a delay of several months in testing the shale, Messrs. Straight Brothers of Fonda, Ia., have secured land and right-of-way and will build a large brick and tile plant.

The Texas Koalin Co. has been incorporated under Maine laws at Portland. J. E. Manter is president; C. E. Eaton, treasurer and M. W. Baldwin, clerk; all of Portland, Maine.

Capitalists are organizing at Watson town, Pa., for the erection and operation of a brick plant on an extensive scale, using a rich deposit of shale which has been found at that place.

The Sumas (Wash.) Fire Brick Co. has been incorporated with \$150,000 capital stock. The incorporators are H. A. Wilson, R. S. Lambert, T. Brown, C. Brown, Leonard Keinig, and M. Keinig.

The Lexington (Ky.) Brick Co., has amended its charter and increased the capital stock to \$40,000. Stockholders are W. S. Cramer, F. A. Cramer, H. C. Cramer, M. C. and O. R. Cramer.

The Canada Brick Fields, Ltd., London, Ontario, has been incorporated with \$100,000 capital stock. The directors are J. L. Thomas, P. W. D. Broderick and C. B. Edwards of London, Ont.

Supt. Frank McDonald of the Minneapolis, Minn, workhouse has had borings made and found a body of clay twelve foot in thickness that is admirably suited for making brick also a twelve foot strata of Potter's clay.

The Winchester Rock and Brick Co. has been incorporated in Augusta, Maine, with \$500,000 capital stock, president is J. H. Shedd of Arlington, Mass, G. H. Elwell of Boston, treasurer and H. L. Bassett of Augusta, clerk.

The Humboldt Brick, Stone & Power Co., will build a brick and tile plant near Freshwater, Cali. The capital stock is \$200,000. C. P. Soule is president, E. W. Webster, Prof. Charles Swenson and several others are the stockholders.

The Granton (N. Y.) Manufacturing Co., has been incorporated with \$150,000 capital stock. Incorporators are Hiram H. Walsh of Newburgh, John M. Bell and Horton H. Cunon of Rutherford, N. J. The company will make brick of all kinds.

W. C. Davis of Boston, Mass and Readsboro, Vt., has secured an option on the Burnham Brick Works at Montague City, Mass. and will organize a stock company with \$100,000 capital to continue the brick yard and also manufacture aluminum.

J. P. Jones & Son, Newman, Ga., will erect a brick plant using Chattahoochee River clay.

The plant of the Rome (Ga.) Brick Co. has shut down to make the necessary winter repairs.

The Martin Bros., tile works, at Greene, Ind., is being taken down and removed to Dunkirk.

The Corwith (Iowa) Brick & Tile Co. has been incorporated with \$20,000 capital stock, by L. Larsen and others.

The manufacture of pressed brick has been started at Mason City, Iowa, and brick peat is used as a fuel to burn them.

Joseph H. White & Sons., Easton, Md., are installing a plant to make brick by the Martin system, which includes a steam brick dryer.

The F. H. Goss Brick Co., Tacoma, Wash., has increased its capital stock from \$25,000 to \$50,000, and will increase the capacity of the plant.

T. P. Lofland has sold his interest in the A. H. Lofland & Bros. brick works at Milton, Del., to his brothers, who will continue with the business.

Phil Nagle, of Newport, Wash., will establish a brick works on the Idaho side of the river on his property, where excellent clay has been discovered.

Wm. M. Curry, St. Bernard, O., is about to start a brick works, and would like plans and suggestions from machinery and supply manufacturers for this purpose.

Wilson & Cassier, of Cedillac, Mich., have closed down their Harrietta yard and completed the year's business. It is expected they will improve the plant in the spring.

Claiming that he can lay 4000 brick an hour, Ben Jones, of Pottstown, Pa., is arranging a match with John Crabb, of Reading, whose record is 11,000 brick in three hours.

Bloomington, Ind., is to have a new modern brick-making plant. The factory will be built in the spring on land owned by A. H. Zimmerman, of Brazil, who will organize the company.

Seventy carloads of material and machinery has been shipped into Carlisle, Ia., with which to build a \$40,000 brick-making plant. William McKissick, of Adel and DeSoto, is building the plant.

The Lester Clay Co., Attapulcus, Ga., which is capitalized at \$75,000 has completed a Fuller's Earth plant and is now engaged in developing the deposits. A. B. Beville is the general manager at Jacksonville, Fla.

The Burnwood (Pa.) Brick & Tile Co. has been incorporated and will build a plant costing \$25,000, twenty-eight acres of land has been sold to Scranton capitalists for this purpose by N. W. Lee of Ararat township.

The Sheldon Brick Co. and the Barr Brick Works, at Urbana, Ills., have been closed for the season, after having made nearly 18,000,000 brick. J. W. Stipes, head of the Sheldon Co., states he has not as many brick on hand this year as last at the closing time.

The Detroit (Mich.) Vitrified Brick Co., has commenced to building of its 75,000 daily capacity brick plant at Corunna. The capital stock of the company is \$250,000, and the officers are: Frank Schmidt, president; E. J. Jeffries, secretary and Joseph Kaiser, treasurer.

The plant of the Sandusky Portland Cement Co., at Syracuse, Ind., has been closed down to make extensive repairs, etc.

The Bull Creek Sand & Gravel Co., 5 W. 12th st, Columbus, Ga., want an equipment to separate stiff mud brick clay from sand and gravel deposits now being developed.

M. J. Bannon, of Louisville, Ky., has joined with Henry M. Clements and others of Carmelton, Ind., to build a nine-kiln sewer pipe works. The capital stock of the company will be \$100,000.

The Finkle Brick Yard Co., Marshalltown, Ia., are now turning out a high-grade pressed brick equal to any in the state. Another kiln, the fourth, is just being completed. The plant will be run at its fullest capacity.

Mr. John Sullivan, of Lansdowne, Pa., has just installed a "Martin" latest improved Style "A" steam power brick machine in combination with pug mill, etc., furnished by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pennsylvania.

Mr. Geo. W. Washburn, Catskill, N. Y., has placed his order with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for two latest improved all iron and steel "Martin" Style "P" steam power brick machines in combination with all iron pug mills, etc.

The West End Brick Co., Allentown, Pa., are at the present time installing the "Martin" patented rack pipe steam brick dryer system of 18,000 daily capacity, including the "Martin" automatic cable delivery system, this being installed by the Henry Martin Brick Mfg. Co., of Lancaster, Pa.

The Blackwell (Okla.) Brick & Tile Co., has increased its capital stock from \$50,000 to \$75,000.

A charter has been granted to the American Brick & Cement Co., Wilmington, Del., capital stock, \$100,000.

L. W. Christian, Weatherford, Texas, contemplates developing some Fuller's earth deposits found near there.

The Graettinger (Iowa) Tile Works has installed a heating plant in their factory and will operate the plant all winter.

The Ogden (Utah) Sewer Pipe & Clay Co., will contract for a rebuilding of its plant on a larger and more improved scale as soon as its insurance is adjusted.

R. D. McManigal has returned from Ft. Smith, Ark., to Logan, Ohio, after being there for eight months installing the new paving brick plant for the Burke Brick Company.

Dr. Warren L. Evans, of Alloway, is to move his Penton brick manufacturing plant a mile from its present site to the West Jersey & Seashore Railway, and will improve same.

Mr. James B. Oberly, of Wilmington, Delaware, is at the present time installing the "Martin" patented system of handling and drying the brick on his plant, of 24,000 daily capacity, and which are being installed by the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa.

Col. A. B. Peake, of Valley City, N. Dak., and Hon. J. F. Brodie, of Dickinson, owners of coal mines at Dickinson and New Salem, have opened up a new mine at the new town of Scranton on the C., M. & St. Paul railway extension, and are also interested in a company which will install a pressed brick plant in the spring.

The GILLETT DOORLESS GRATELESS Hot Air FIREBOX For Blast Kilns

Patent No. 792,769



Something altogether new in the firebox line. Burns a the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market, Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

DIRECT HEAT DRYERS

**FOR
BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

CLAY RECORD.

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write.

Brick and Tile Machinery
Secor, Ill.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enameled Brick & Tile Co.
1 Madison Ave. New York

NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$24000, of 240 shares, at \$100 each at par. To equip a complete brick making plant on field of 60 acres, proved at 40 feet and analyzed by the Henry Martin Brick Machine Mfg. Co., of Pa., U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway Siding of Claysmore, on the C. N. R., 6 miles from Vermilion City. The Bull's-eye of the famous Saskatchewan Valley, and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped, up-to-date plant on the field, on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER EASON
Pioneer Builder and Contractor
Vermilion, Alta.

Solicitor
K. V. Fieldhouse, Esq., L. T. B.,
Vermilion, Alta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York

BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant, local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the

BUSINESS MEN'S ASSOCIATION
Jacksonville, Illinois

POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick and building tile. Understand making magnesite and silica brick; want position as superintendent.

W. T. J., care Clay Record,
Chicago, Ill.

POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.

TRAVELER, care Clay Record,
Chicago, Ill.

FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address
C. SOLFISBURG SONS
Aurora, Illinois

WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAPGOODS,
305 Broadway, New York City, or
1010 Hartford Bldg., Chicago, Ills.

BRICK YARD FOR SALE

Old established yard in good town of 5,5000 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address
CHARLES MCNEAL
Maryville, Mo.

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:

4. J. CARE OF CLAY RECORD
Chicago, Illinois

PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soft mud and stiff mud machinery, engine, boilers and sheds for 8,000 brick daily. Two Clamp kilns and Stewart kilns. Plant runs steady and can't supply the demand at good prices.

Write to J. WYNN
Weldon, Iowa

WANTED

Wanted a small dry pan in good condition. Parties answering this advertisement will please give the name of the make of the pan, together with best price.

CLEMENT JUNGERS
Streator, Illinois

PARTNER WANTED

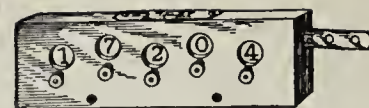
A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.

THE FERNHOLTZ BRICK MACHY. CO.
1446 Old Manchester Road,
St. Louis, Mo.



No better made, cut from
\$3 and \$10, to
4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.
Sold by all dealers.

Paper Joggers quoted.
R. A. HART, 41 White St., BATTLE CREEK, MICH.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,
Care Clay Record, Chicago, Ill.

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.

Box 81.
Independence, Iowa

PALLETS FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address,

MARTIN
Box 587 Lancaster, Pa.

POSITION WANTED

Position as Superintendent or Manger of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. A-references. Eastern plant preferred. Address

"PAVER" Care of CLAY RECORD
Chicago, Illinois

FOR SALE

One No. 26 special double shaft pug-mill, top and bottom discharge, 12 foot tub; good condition; manufactured by American Clay Working Machinery Co.

Sandusky Portland Cement Co.
Sandusky, Ohio

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

709 Chamber of Commerce,
Astoria, Oregon

SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer pipe. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.,
Des Moines, Iowa.



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CHICAGO, DECEMBER 16, 1907.

Semi-Monthly, \$1.00 per Year
Single Copies, - 10 Cents

ADDRESS OF PRESIDENT DUERR TO NA-
TIONAL ASSOCIATION OF MANUFAC-
TURERS OF SAND-LIME PRO-
DUCTS AT COLUMBUS, O.

DECEMBER 4, 1907

It is with pleasure that I welcome you to our fourth annual meeting. We are to be congratulated on so good an attendance; it at least indicates that there was some cash to be had from the banks in your several communities. I trust that we, neither as individuals nor as an association, are subject to the suspicion and lack of confidence that has placed so grand and prosperous a country as ours in so conspicuously ridiculous, not to say dangerous, position as to be almost panicky.

How easy it is to forgive ourselves the mistakes made in sand-lime productions when we hear of old, tried financiers, men of science and of letters, crying ruin, because we have a man at the head of this nation who knows right from wrong—who can, and does, assert it. I can only pray that this association at this meeting, and at all other times, may emulate the great ideals which our esteemed president lives up to.

I do not wish to be understood as being optimistic or pessimistic. I have considered the pros and cons of the sand-lime products industry in all its phases so many times that I am becoming more and more conservative over it. Notwithstanding that conservatism, I believe today in the future of the sand-lime products industry just as firmly as I do in the future of our nation.

As we are leaving behind us a period of frenzied finance, a period of irresponsible, questionable business transactions, and moving into a new era of truth and integrity, so also is the sand-lime products industry bound to pass through a transition period—from the period of irresponsible promotion, a period of unreliable production, to a period of greater intelligence and more thoroughness.

As we look back over the last five years in this industry, we cannot help but feel that we have been in a very chaotic state. The time seems ripe for us to take stock. Why? Because of the failures, and because of the necessity of the

future of this business. We must make the public believe in us; and to make the public believe in us, we must first believe in ourselves. Just so long as we are producing a material indifferently good, when in the depths of our own hearts and consciences we know we can do better, just so long we cannot obtain the recognition to which we are entitled.

Gentlemen, you know that there is not one of us who cannot make a better article than he is now producing, at no greater cost, if he will make the effort.

If this association is to continue for any good purpose whatsoever, and accomplish anything, it must stand unqualifiedly for truth. And when I say truth, I mean the truth of the good worth of its materials, for which this organization stands.

Let us briefly glance over the history of the past few years, since the advent of this industry, and note what has been done.

From the consular reports we hear that a great invention has been discovered in Germany which is to revolutionize the building industry in many communities. This discovery has been commercialized and is showing wonderful success. Next we hear of the organization of certain companies being promoted for the purpose of manufacturing this wonderful building material under rights which have been given by dispensation; and if you wish to reach that great goal of your ambition, it is incumbent upon you to obtain, immediately, a franchise. Unless you grasp the opportunity at once, your neighbor is going to take it away from you and, consequently, you soon find yourself possessed of the right to manufacture this building material under the special dispensation which no one else in your community can have. Your opportunities are without limit. You have the world at your feet. The result, in cold facts, is that the franchise for which you paid good hard cash is worthless because you find that there are other franchises, equally as good, being given away with a package of machinery, for which you paid good money. You find yourself possessed of a badly designed plant, with machinery wholly inadequate for the purpose intended. On the top of all this you have gone into a business which you

are led to believe required no knowledge, and you find yourself entirely out of place, without knowledge or cash. What has been the result? Failure, discouragement, heartaches, backaches, even hardships for many, with but few successes.

The surprise to me is that there have been so many successes. The fault cannot be placed upon any one thing, but upon everything.

Can we remedy the situation? I say, yes. What shall we do? First, as individuals, second, as an association, let us firmly make up our minds that we are going to make the best possible products that can be made. When we have done that, we will have the public with us. Have we the appliances necessary to do this? Again I say, yes. There are a number of good reliable concerns, some members of this association, who are capable of producing, and who do produce, good machinery. Do not let us tempt them, however, to neglect our interests by inadequate compensation. Let us demand the best from them and pay the best prices.

Again let me reiterate that there is not one of us who cannot make better brick at no additional expense. This may seem like a broad assertion, but I believe that every one of us can prove it to our own satisfaction if we make the effort.

The public is going to demand better results from us. I do not mean to say that they are going to single us out, but the demand is becoming general in all lines, and we cannot expect to be overlooked.

Last summer one of our members addressed a letter to the association, stating that he was being discriminated against by the Board of Fire Underwriters', in that they were placing the highest rate of insurance upon buildings built with his brick, classing the brick in the same class as concrete block; which meant, practically, in the same class as a frame building.

And, by-the-way, I only recently saw an article in one of the cement journals headed:

"Methods that contribute to success, and some of the causes of failure. Manufacturers beginning to realize that experience is essential to success."

The article under this heading is prefaced by the following remarks of the editor:

"In publishing the following communications on the subject of concrete block, it is with the conviction that the time has arrived when the manufacturer must discriminate between good and bad methods if the industry is to prosper. Excellent block, answering every structural requirement, have been made in the past and are being manufactured to-day. On the other hand, there have been many failures.

"From time to time 'Cement Age' has published communications from experts, who have explained the secret of making good block. Some have been advocates of the so-called dry or hand-tamped mix, and others have had equal success with the hydraulic process. All agree, however, that to achieve success there must be the knowledge or experience required in any other industry.

"It is safe to say that in undertaking the business many blockmakers were chiefly influenced by the conviction that it required no previous experience and could be intrusted to workmen of ordinary intelligence. Here and there very in-

telligent and capable men have failed to master the secret of making good block, and, being too honest to deal in an inferior product, they have abandoned the enterprise. It is with the hope of assisting blockmakers of this class that we publish the following letters, one from Mr. J. F. Murray, manager of the Pocatello Pressed Stone Co., Idaho, stating why he regards the concrete block as a failure, and replies thereto by Messrs. H. H. Rice, of Denver, and Noyes F. Palmer, of Brooklyn, both experts on the subject of block and among the pioneers of the industry."

The subject is too lengthy for us to go into in detail. It is sufficient for us to try to benefit by their experience, if it is possible.

To get back to the subject in hand. After more or less correspondence, a committee was appointed to take up the matter with the National Board of Fire Underwriters, Chicago. A meeting was arranged by the secretary and was attended by a committee of your association.

The reply to our statement that we felt we were being discriminated against was, "We know nothing about your materials, the matter has never been officially before us, and consequently we placed the material on a rating where we felt we were safe until such time as it had been demonstrated to us that an injustice had been done," to which your committee replied, that many tests had been made by laboratories and eminent experts. The question was then asked, "That may be true in individual cases; but do you mean to tell us that all your plants are making uniformly good brick?" I regret to say that your committee was forced to admit that such was not the case. After considerable further discussion and correspondence, it was agreed to frame specifications, which would meet the requirements of a good building material and a good fire-resistive material, these specifications to be submitted for joint adoption and, such plants as made a product which came up to these requirements, were to be indorsed by the National Board of Fire Underwriters. This indorsement entitled the owner of such buildings as were built of such indorsed brick to receive the minimum rate of insurance. I trust that, after careful consideration, you will see fit to act formally upon them. It behooves every member of this association to make brick which will pass these specifications. In my opinion there can be no higher incentive for every manufacturer to make good brick.

I trust you will forgive me for dwelling at such length upon this particular phase of the situation. My excuse is that I feel the situation keenly, for I can see no longer need of our traveling blindly.

All of our meetings have been delightfully full of enthusiasm and good work, but I am afraid that before we start for home many of us will have lost that enthusiasm. This condition does not help us. I have given much thought to what might be done to keep up the interest and to continue the work throughout the year, and if I may be permitted to make a suggestion, I would like to ask the association before we adjourn this year, to consider the dividing of the territory, which the association covers, into sections, each section having an executive official who shall call meetings of his section quarterly, or at such periods as may be thought best, and if the members of these sections

are unable to attend the national meeting, to send one or more representatives to the national meeting, who can report the results to the sections at an early day.

Too much work for the individual good of our members cannot be done at the present time. We are in a critical period in our national business affairs. We have a right to expect a period of more or less business depression, although we hope to the contrary. It is a time when we must all curtail every possible unnecessary expenditure, when we must enforce economy. And what greater curtailment can we make, what better economy, than to put our plants on a good, steady, daily output of ultimate capacity? And how can we better accomplish this than by knowing the achievements of our successful neighbor, emulating his results by adopting his methods? Therefore, let us enter into the proper spirit of this meeting and put into practice throughout the year the benefits derived. Let us stand together, and standing uphold the best methods.

INGENIOUS SCHEME FOR SORTING TILES

While the products of a tile kiln come out as irregular in color, size and shape, as they do at present in many yards, it will be necessary for them to be sorted into different groups, according to the shade and shape of the goods. This sorting may be of an extremely rough character in the case of the commoner tiles, but for better class ware it is essential that it shall be carried out with thoroughness and dispatch.

Unfortunately in large works this sorting takes up the time of several work people, and involves a considerable addition to the cost of the goods—a cost which it is difficult to reduce satisfactorily. This is partly due to the fact that each sorter must work independently, and can only be assisted to a very small extent in his work by mechanical aids.

A short time ago, however, Mr. C. Harzer patented a transporting table for this purpose in Germany, and after running for over a year this table has proved so satisfactory that several other firms have adopted it with equal satisfaction and economy.

In Mr. Harzer's firm there is a daily output of 45,000 red floor tiles, and these must be sorted according to their shade, size, straightness and hardness. This sorting used to employ thirty-two workpeople, but since the use of the patent sorting table, only eighteen hands have been necessary.

The table really consists of a framework upon which runs an endless belt ruled into four divisions, as shown by the dotted lines in the accompanying illustration. Each division of the table corresponds to a certain quality of tile, so that the sorter has simply to place the tiles in the right division of the table for them to be carried away, properly sorted, to the packers, etc. The sides of the table are fixed, and "bridges" may easily be made by laying a plank across from side to side, on which the sorter can stand the saggers as they are brought from the kiln, in order to save time in emptying them. Where the tiles are not burned in saggers an endless band is taken from

the sorting-room to the kiln, and the kiln drawers place the tiles directly thereon, so that no unnecessary handling is permitted.

Incidentally the use of this table produces steady work, because any cessation of work leaves gaps in the tile-covered table, whilst slow sorting leaves greater spaces than is necessary between the tiles. This results in a greater economy of labor, for the speed of the travelling portion of the table can be regulated to suit local conditions. As each workman has a separate table, no confusion of results can take place, and one does not get in the way of another. This enables the quick sorter to show better results than his slower colleague, to his own and his employer's advantage.

It is usually better in practice to use the table mainly for sorting into different shades, and for separating warped or damaged tiles, the goods being tested for accuracy of size or thickness (when necessary), at a second table. This is the more desirable, as first-class sorters for color are not easy to obtain in large numbers, whilst gauging can be easily done by quite young girls and boys.

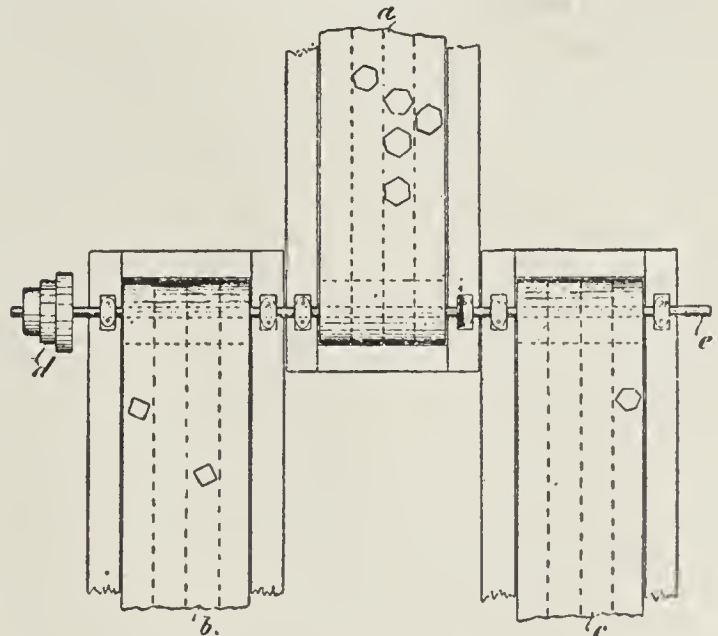


TABLE FOR SORTING TILES

The precise form of the table is of minor importance, that shown in the patent specification and in the accompanying figure being as convenient as any. As will be seen, the endless bands forming the top of each table are all three driven from one shaft (e), the direction of travel being the same in each case. The sorters stand on the outer sides of tables b and c, and the "takers off" for table a stand between tables b and c. At the opposite ends of the tables stretching appliances are fixed, so that each band runs evenly and without noticeable sagging.

The simplicity of the arrangement, added to the comparatively low cost of construction and maintenance, should commend it to tile manufacturers in this country, where, so far as we are aware, it has not been patented.

The Farr Brick Company, of Cleveland, Ohio, who have had the "Martin" patented dryers in operation in their plants for quite some time have now placed contracts with the Henry Martin Brick Machine Mfg. Co., of Lancaster, Pa., for an additional "Martin" dryer of 30,000 daily capacity; this brings their daily capacity up to 60,000 brick.

THE STEAM ENGINE AS APPLIED TO BRICK YARD PRACTICE

W. S. Stafford, M. E.

To adequately trace the history of the steam engine from its inception to the present time, would require much more time and space, to say nothing of knowledge, than the writer has at his disposal. James Watt is generally credited with building the first successful steam engine, but many authorities on this subject claim that Thomas Savery completed the first *commercially successful* steam engine in 1693. In 1705 Newcomen introduced the first successful engine with a piston working in a cylinder. This engine was quite extensively used until about 1765 when Watt perfected his prime mover. It must be conceded that Watt is undoubtedly the father of the present day reciprocating engine, and nearly all the improvements since that time have been along the line of his construction and suggestions. Watt is also the originator of the indicator, an instrument of incalculable value in a steam power plant.

In brick yard construction, one of three classes of engines is generally used, viz: throttling, automatic or Corliss, and a short explanation of each type may possibly interest some of my readers. Very few brick plants require sufficient power to justify the installation of the higher grade types of engines, such as compound, triple and quadruple expansion, or condensing engines of any kind, and for that reason, any further mention of them would be nearly useless in a trade journal devoted to the interests of clay-workers. The throttling or plain slide valve is without question the simplest engine made today. In this type the steam is throttled in the steam pipe, thereby regulating the pressure of steam admitted to the cylinder. This class of engine, as a general thing, is used only in plants requiring small power and where economy and regulation are of minor importance; cost alone being considered.

The most popular type of engine on the market to-day is the "automatic" equipped with what is known as a shaft governor, placed on the main shaft. With this form of governor, steam is admitted to the cylinder at full pressure, the governor varying the point of cut-off in the cylinder instead of steam pressure as in the case of a throttling engine. Shaft governors are made in many forms, but the constituent principle is the same. The governor simply changes the angular advance of the eccentric, controlling the cut-off according to the load the engine is carrying. This type of engine has been found to be particularly adapted to small and medium size direct connected electrical units. The term "direct connected" is applied to a generating unit when the rotor of the dynamo is fixed on the engine shaft. Outfits of this kind require engines running from 200 to 750 revolutions per minute. Close regulation of speed is very necessary in an engine of this kind, as the slightest change in the speed will cause a varying voltage and consequent flickering of the lights. The fly-wheel should be heavier than standard, it also acting as an auxiliary governing medium. On account of the high rotative speed of such an engine, all reciprocating parts should be made very strong, but as light as possible to reduce vibration to a minimum. Bearings should be extra large and kept fairly tight; crank

and cross-head pins should also fit snug, as even a slight looseness will cause a pounding and hammering until the part is ruined.

In modern engine practice the Corliss engine has always been considered the standard of economical engine performance. While numerous installations of other classes of engines will be found to combine equal economy with decided advantages in other ways, nevertheless it is also true that for average power plant conditions nothing can be better than a good Corliss engine. There are many reasons why this type of prime mover is usually more economical and efficient than an automatic or throttling engine. The entire separation of admission and exhaust ports is well known to be the principal source of economy in all slow speed engines. This feature prevents repeated heating and cooling by alternate passage of live and exhaust steam through the same ports. The action of the valves in a Corliss engine, particularly the quick closing of admission ports, is another important feature of this class of engine. This reduces wire-drawing very materially. To explain fully the loss caused by wire-drawing would involve the use of higher mathematics. The great range through which the cut-off can be varied from very early to very late in the stroke is a very decided advantage. However, in purchasing a Corliss engine, intended to carry any great amount of over-load at times, double eccentrics should always be specified. As a general thing it is impossible for a Corliss gear to cut off later than half stroke when operated by a single eccentric. When two eccentrics are used, one for the admission and one for the exhaust valves, the cut-off can be made much later if necessary.

There can be no question that the slow speed of the Corliss engine gives it a longer life. In modern engine practice a piston travel of 600 to 800 feet per minute is usually the limit, as the best results are obtained at these speeds. A Corliss gear requires time to act and a great many authorities do not advise running at faster speed than 100 revolutions per minute. This is, of course, varied according to stroke of engine to keep within limits of piston travel mentioned above. For ordinary sizes keep as near as possible to 600 feet piston speed and you will find that the engine will be more efficient and give better satisfaction. Standard makes of Corliss engines are usually equipped with a fly-ball governor. Of late years a great many improvements have been made on them to meet the demands of modern practice for close regulation, particularly in electric light and power stations.

The internal friction on a slow speed engine is usually less than on a high speed, or in other words its mechanical efficiency is greater. As this friction remains about constant regardless of load on the engine, it is best to buy an engine that will develop the average horse power required at its normal speed and at an economical point of cut-off. Presuming that the internal friction is constant or nearly so, the mechanical efficiency would decrease as the load on the engine becomes lighter. The low clearances on a Corliss engine is another good feature, which helps greatly in securing economical operation.

No steam power plant is complete without an indicator. By its frequent use defects will be discovered and located in

the engine, particularly in valve setting, that could not be accurately determined in any other way. Exact knowledge of the action of the steam in the cylinder is very necessary in order to keep the engine up to its highest possible efficiency. By comparing the brake horse power of the engine with the indicated horse power found by the indicator, the mechanical efficiency is obtained. The instrument also shows admission, release, cut-off and compression, which together, make up what is called steam distribution. Steam consumption can be approximately computed, and cylinder condensation calculated by its use. As stated before, James Watt was the inventor of the indicator and the essential features of the modern instrument are found in the one introduced by him. It has been mainly through the use of the indicator that the engine of to-day has been brought to its present state of perfection.

Too much cannot be said in favor of proper and sufficient lubrication. Friction is one cause for loss of power in a steam engine and close attention to lubrication will go far toward decreasing this friction, thereby increasing the mechanical efficiency of the engine. Above all things use good oil, especially for the cylinder, as the valves and piston are the most delicate parts of the engine. A high fire test oil is always to be preferred, so that it will not evaporate at the steam temperature. Engine oil should not be too thin, so that it can be squeezed out between bearing surfaces, but should be viscid or glutinous and adhesive. Heating will tighten a bearing and will increase the cutting and heating. Poor oil is dear at any price.

The economy of an engine is based on the steam consumption per indicated horse power per hour and can either be determined by actual test or figured approximately from an indicator card. A table made up by one of the best known central station engineers in the country gives the steam consumption, in pounds, per indicated horse power per hour for the types of engines spoke of in this article, as follows.

Throttling	40 to 70.
Automatic	30 to 45.
Corliss	25 to 30.

The above figures are based on 100 pounds steam pressure and average working conditions. Fuel consumption increases or decreases in the same proportion as steam consumption, and it is sure that if an engine requires only half the steam necessary to develop a certain horse power that some other class of engine requires, that you will use but half the fuel. Think this over, and if you are operating a "steam eater," as some engines are called, figure out for your own good how much money you could save in fuel in one year by using an economical engine and the amount on which this money saved, would be a good rate of interest, will surprise you.

Regardless of the type of engine you purchase, let it be a good one of its kind. It is the heart of your plant and is deserving of more consideration than it usually gets. Engines are valuable in direct ratio to their earning capacities. In one case close regulation is necessary for the character of the work to be done; in another economy of fuel is essen-

tial; or it may be both economy and close regulation, while in other cases capacity is wanted and consideration of fuel is of no account.

An engineer's duties should not consist of only opening and closing the throttle valve, and keeping oil cups full. An engine needs other attentions and sometimes can be coaxed to perform exceptional duties, if its peculiarities are understood. Some engineers are entirely too free with the use of a wrench and imagine many adjustments to be necessary. Before an adjustment is made find out, if possible, the nature and exact location of the trouble. This is one of the places where the value of an indicator is felt. Too much guess work has ruined many a good engine and ever afterward the engineer at fault has condemned that particular make of engine as being unsatisfactory. Prejudices of this kind has cost the engine manufacturers many a dollar to overcome.

THE PRODUCTION OF LIME IN 1906

The lime production in the United States in 1906 amounted to 3,197,754 short tons, valued at \$12,480,653, an increase over the production for 1905 (which amounted to 2,984,100 tons, valued at \$10,941,680) of 213,654 tons in quantity and of \$1,130,425 in value. The average price per ton in 1906 was \$3.90, against \$3.67 in 1905, an increase of \$0.23.

These figures are reported by E. C. Eckel, in an advance chapter from "Mineral Resources of the United States, Calendar Year 1906," published by the United States Geological Survey and are now ready for distribution.

The distribution of the production by States shows that Pennsylvania, with 624,060 tons valued at \$1,857,754, has first place, its nearest competitor being Ohio, with 331,972 tons valued at \$1,100,133. Maine, Wisconsin, and Minnesota each produced more than 200,000 tons, with values approximating \$1,000,000; and Maryland, Illinois, Massachusetts, New York, and Vermont follows in the order named, with productions of more than 100,000 tons. West Virginia, Alabama, and Connecticut each exceeded 90,000 tons. The value per ton increased in almost every State, the producers giving as cause the increased cost of fuel, supplies, and labor.

Of the total production, 2,647,724 tons were sold for structural uses as building lime, hydrated lime, for sand-lime brick manufacture, for slag cement, and for quick-lime brick; 550,030 tons were used in various chemical industries.

The number of lime burners reporting production was 1,012, and 951 of these, or over 90 per cent, gave information as to the character and quantity of fuel used. Coal alone was used by 549 makers; wood alone by 285; shavings by 3; mixtures of wood and coal were used by 76; of coal and coke by 9; coal and gas by 9; wood and coke by 1; and wood, coal, and coke by 1; gas was used by 6, and oil by 5. The total fuel consumed included 481,241 cords of wood, 22,945 short tons of shavings, 501,081 short tons of coal, 4,098 tons of coke, 24,486 barrels of oil, and 429,978,000 cubic feet of gas, the gas including both natural and producer gas.

From the total fuel consumed the average fuel consumption per short ton of lime burned with different kinds of fuel has been determined, and using average values for heat units in the various fuels, the average efficiency of the limekilns of the country has been calculated. Comparing the theoretical quantity of heat required in burning a ton of lime, as stated in a volume he has recently published with the quantity consumed in 1906, Mr. Eckel concludes that the average limekiln wastes almost exactly half of the fuel put into it.

PRODUCER GAS POWER, AND A REPORT OF A TEST

By M. P. CLEGHORN, M. E., in the *Iowa Engineer*.

Engineers of the last ten years have been watching with interest the growth of that simple yet remarkable engineering product, the gas producer for power purposes. While yet in its youth and a rather imperfect state, it has dormant within itself possibilities which, if realized, will revolutionize the field of the prime mover. Gas engines using natural gas, or those lighter hydrocarbons of petroleum are not new to persons who are observing. They have been on the market for a considerable time and have proven themselves worthy of consideration in certain lines. They have been tested, and tested severely, and the results show them to be far ahead of the steam engine from a thermal standpoint, and about on par from the standpoint of reliability. Furnish them with good and sufficient gas and they will hold their own.

The producer for generating gas from coal suitable for use in the gas engine is not so well known, but it is at this time under the scrutiny of the engineering world which is watching with interest the results that are being obtained in the severe commercial tests.

The producer, as built today, is an air-tight fire pot with a grate in the bottom and a double-covered opening at the top through which the coal to be gasified is allowed to pass without admitting a large quantity of air. The coal fire is started and the supply of air is limited, thus forming a large percentage of carbon monoxide, due to the incomplete combustion. This carbon monoxide is the valuable constituent of the gas since it burns to carbon dioxide in the engine and produces the heat for operating the engine. The gas as it leaves the producer is hot and dusty and may contain some tar. It is therefore passed through a scrubber, which is a closed steel cylinder filled with coke over which a quantity of water is sprayed. In this scrubber the foreign matter is removed and the coal gas passes on to the engine. Surrounding the upper part of the producer, or the gas pipe after it leaves the producer, is a water jacket, or vaporizer, as it is called. Water is fed to this and changed to steam by the heat of the gas. This steam is led down to the bottom of the producer below the grate and passes up through the fire with the air. The steam cools the fire to a certain extent, and thus reduces the formation of clinker, besides adding to the gas a considerable percentage of hydrogen, due to the decomposition of the steam. The air and steam may be forced through the fire by means of a blower, or it may be drawn through by the suction of the engine. The former is called a pressure producer, and the latter a suction producer.

The suction producer should have a fuel whose gas is comparatively free from tarry matter, as the apparatus for its removal would interfere with the free passage of the gas. Thus it is that only anthracite coal, charcoal and coke have been used to any extent in the suction producer. The pressure producer will handle most any non-caking coal or lignite, but the necessary apparatus for the removal of the tar or lampblack makes the producer more complicated.

The important constituents in the gas, in either case, are

carbon monoxide (CO), hydrogen (H), and the light hydrocarbons (C^xH^x).

The suction producer, being more simple, is the one to be preferred in plants of three hundred horse-power or less. It is not only more simple, but both the initial cost and cost of operation are considerably lower for those sizes.

One of the first commercial plants in this state was installed at the little city of Algona about two years ago. This plant was of the suction type, and was installed for the purpose of furnishing electric current to the city and pumping water for the water system. The engine was of the vertical, throttling governor type, composed of three cylinders, and rated at one hundred-fifty brake horse-power.

TABLE I.
TEST OF PRODUCER GAS POWER PLANT. 150 B. H. P.
SUMMARY OF RESULTS.

Number of Run	I	II	III	IV	V	VI
Length of Run —Hours	6	7	6	6	14.083	12.5
Horse-Power Developed ...	40.13	82.52	156.95	113.27	38.86	63.2
Total Horse- Power Hours.	240.78	577.64	939.7	679.62	547.27	790
B. T. U. Devel'd in Work.....	612782	1470086	2391524	1729623	1392795	2010539
B. T. U. per Lb. Dry Coal.....	10990	12880	13315	12990		
B. T. U. per Lb. as fired.....	10740	12470	12905	12500		
Lbs. Coal as fired.....	363.75	671	941	871.5	1404.75	1077
Total B. T. U. in Coal as fired..	3905300	8370300	12143500	10948400	17087200	13100400
Lbs. Ash.....	59.9	151.5	181.4	89.5	61.5	73
Pr. ct. unburned Coal in Ash..	50.14	67	57.53	42.72		
Total B. T. U. lost in Ash...	330100	1307400	1382400	496700		
Lbs. of Coal per B.H.P. Hr	1.51	1 16	.999	1.3		
Lbs. of Coal per K.W. Hr.					4.1	2.23
Fuel cost per *B.H.P. Hour	.45c	.35c	.29c			
Fuel cost per *K. W. Hour					1.2c	64c
Apparent load Factor..					.32	.54
Thermal Eff of Plant ..	15.69%	17.56%	19.69%	15.79%	9.44%	18.06%

*Coal \$6.00 per ton

The ignition was effected by means of a mechanically operated electric igniters with adjusting levers for changing the point of ignition. In starting, the spark was obtained by means of an electric battery, but as soon as the engine was up to speed, it was switched over to an "Apple" sparking dynamo. The engine was started by means of compressed air in one cylinder, the air having been compressed into a tank by means of a small compressor run with a gasoline engine.

In every day operation, the engine was belted direct to a 75-KW alternating current generator which furnished current for city light and for running an electrically-driven air-compressor. This compressor furnished air for lifting water from a deep well for the water works.

The producer, as mentioned before, was of the suction type, and of sufficient size to accommodate the engine. The producer was five and three-quarters feet diameter and eight feet high. The vaporizer was really a miniature tubular boiler through which the hot gas passed on its way to the scrubber. The scrubber was a cylindrical sheet-metal tank, four feet in diameter and twelve feet high, filled with coke. Water sprayed into the top trickled down over the coke and in meeting the gas coming from the bottom removed from it the dust and dirt which it contained.

This complete plant was installed by the Fairbanks-Morse Company, and as far as the author has been able to learn, was the first plant of its kind in the state at the time of its installation. On this account, it aroused considerable interest. Some time after its installation, a test of the plant was made by two seniors in Mechanical Engineering at the Iowa State College, Messrs. Wilkinson and Lungren, and it may be of interest to note the results.

Four brake load tests were made, and two tests with generator load. The brake was the ordinary pony brake, and was so adjusted as to give for the four tests, one-fourth, one-half, three-fourths, and full-rated load, respectively. Anthracite pea coal was used throughout all the tests. Space will not permit of a detailed report of the tests, hence only the final results will be given here.

Table I is a summary of results obtained in the several tests.

The numbers I, II, III and IV refer to one-fourth, one-half, full load and three-fourths brake load, respectively; number V refers to the test made with the generator carrying the lighting load only, and number VI with the generator carrying the lighting load and the electrically-driven air-compressor. Since the load was more nearly constant in number VI than V, the load factor was higher, hence better results were obtained.

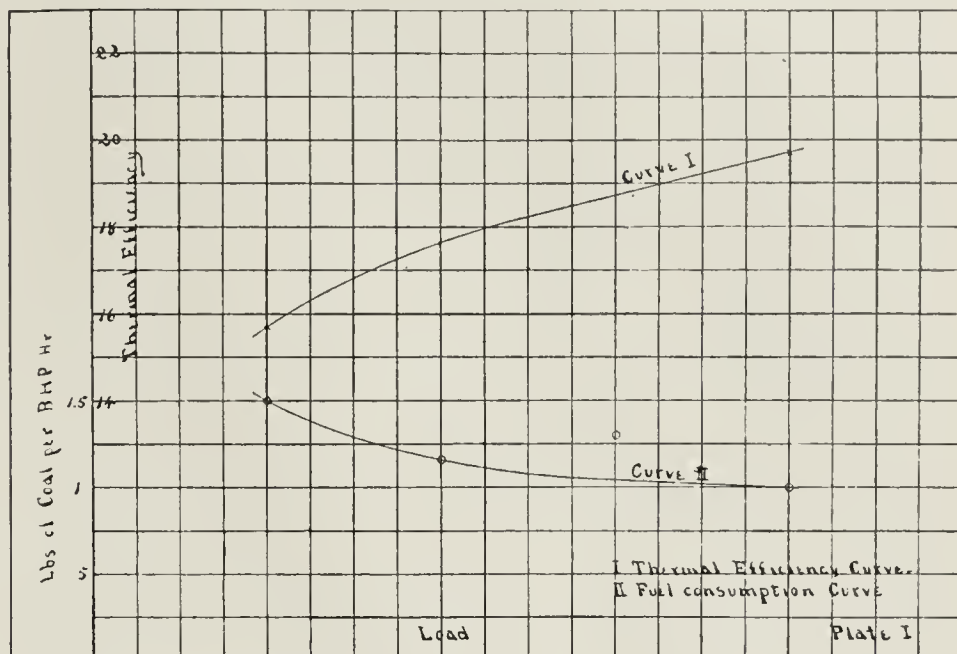
TABLE II.
HEAT BALANCE AT FULL LOAD.

	B. T. U.	%
In coal as fired.....	12143500	100
Converted into useful work.....	2391524	19.69
Lost in unburned coal in ash.....	1382000	11.46
Lost by radiation from producer.....	285000	2.33
Lost by radiation from scrubber.....	39000	.31
For heating water in vaporizer.....	79000	.65
Lost in scrubber water.....	887000	7.3
Lost in jacket water.....	2539000	20.9
Lost in exhaust.....	3856000	31.75
Unaccounted for	684976	5.61
Total	12143500	100

During the three-fourths brake load test, number VI, some trouble was experienced with the producer, hence we find the results for that run at a variance with those of the other runs. The apparent load factor is the actual KW output for the run divided by the capacity output for the duration of the run. The cost per KW hour as given under runs V and VI includes the coal for banking and starting. The thermal efficiency was obtained by dividing the brake load equivalent in B. T. U. by the B. T. U. supplied in coal as fired.

Table II contains a complete heat balance for the plant at full load. Plate I shows graphically and in a clearer manner the comparative results obtained in the brake tests. These results are interesting and tend to show the superiority of the gas producer plant from a thermal efficiency standpoint, over that of steam.

Realizing the necessity of training the technical graduate in the operation of this prime mover which is to be a worthy competitor of steam, and desiring to do some original research work along this line, the department of Mechanical Engineering purchased, and has just installed, a gas producer and engine. This producer is of the suction type, and is designed to operate on pea anthracite coal.



The vaporizer surrounds the top part of the producer, and the water is heated as the hot gas rises from the fire-pot. The engine is a two-cylinder, vertical, with a throttling governor, and is rated at forty-three brake horse-power. It is arranged with a combination brake and belt pulley, so that the engine can be used with brake load or belt load without changing the pulley. The plant was installed by the Fairbanks-Morse Company.

Before the plant was accepted, it was run at full load for two days, after which an eight-hour, full-load brake test was made. During this test, the plant generated a brake horse-power hour on 1.13 pounds of anthracite pea coal, and gave to total thermal efficiency of eighteen per cent.

During the next few months, the plant will be tested under various conditions, and with various fuels, and the results will be published from time to time as they are obtained. The department hopes, in this way, to bring the engineering public into close touch with the facts regarding the gas producer plant for power purposes.

BREWER BULLETIN NUMBER EIGHT

Illustrations, descriptions and specifications of the Number 21 and Number 59 Conical Roll Clay Crushers are shown in Bulletin Number Eight, recently issued by H. Brewer & Company, Tecumseh, Mich.

This is a splendid form in which to show the points of merit in machinery, and makes the details so clear that it is like having a representative before you making the explanations and booking the order. Write for Bulletin Number Eight.

THE ARCHITECT'S ATTITUDE TOWARD SAND-LIME BRICK *

By J. M. Marriott, Columbus, O.

The question of the architect's attitude toward sand-lime brick is of such great importance to the architect and his client, and to the manufacturer and the dealers in this material, that I regret exceedingly that a press of business has made it impossible for me to give this subject the time and thought it deserves. I also feel that I am but poorly qualified to properly handle a subject of so great importance.

There are so many architects in this country to-day, that it is impossible for me to say positively what views others hold on this question. However, the best way to learn what other men think, whether they be architect, manufacturer, dealer or prospective builder, is to go to them with the question at hand and ascertain their views.

I have made an effort to do this, with the result that I became convinced that my own experience in the use of your product and opinion as to its merits reflect in a fair way the attitude of a majority of my brother architects.

My attention was first called to sand-lime brick in Birmingham, Ala., where I was in business till 1904. A new plant had been established there and they introduced their product in open competition with other brick.

For several reasons (which it may be well to mention), prospects were exceptionally bright for this new enterprise. In many sections of the south, there is no suitable clay from which to make a good pressed brick, consequently it was necessary to import all first-class building brick from the north. This naturally made the price of brick high and created a market for the new product. Other natural conditions favored the future of sand-lime brick, for in and around Birmingham there were fine deposits of silica sand and the finest of marble lime, the two principal ingredients of sand-lime brick. Thus you see that, with the natural conditions favoring this new enterprise, it was only necessary to unite good management and capital with these natural resources and its success would be assured.

The problem which faced this new company, and which has, I believe, been the obstacle in the path of every sand-lime brick company, was to get the architects to recognize their product, and convince the public of its merits.

How could they convince the architect that this brick was as good as others, that it would stand the ravages of time and the attack of the elements; and that it would produce artistic effects.

Clay brick had stood the test of years, it had satisfied the public and readily adapted itself to the various needs of the architect; but it was expensive. Here was a new product, costing less than its older rival; would it meet the requirements and stand the test? It must have merits which would win the recognition and support of the architects.

The successful practice of architecture is dependent upon many qualifications. One of the most essential of these is the ability of the architect to appreciate the value of new inventions or products in all branches of the building trades. However, his decision relative to such matters must always be influenced by his relation to his client, which as you well

know, is that of mediator, or in many cases the final judge of what is to his client's best interest. To protect our client's interest we must know how to advise him at all times and under all circumstances. We are responsible to our client for the trust he has placed in us and in the advice we give him we must be certain of our position.

Then, too, our reputation is at stake. We must be certain that we are right; in spending the money of our clients we must be even more careful than though we were using our own capital. We cannot afford to give advice unless we are sure the result desired will be accomplished.

What, then, should the architect do if he is called upon to recommend a new product?

He should first investigate and satisfy himself that the product is good, that it will fulfill all essential requirements and that it is in every way what it is claimed to be.

Here, then, is the problem, and the architect must be the judge. He must protect his client's interests on the one hand, and the interests of the producer on the other.

His adverse judgment may mean the ruin of a new industry in which a small fortune is invested. Is it not essential then that he investigate even in detail before committing himself?

Here has been the great trouble with many members of our profession, they have not investigated. They have passed judgment without proper consideration, and instead of aiding a new and worthy enterprise, they have hampered its progress.

When sand-lime brick was first brought to my attention I was confronted with statistics and government reports, I was told the brick had been used in Germany for a hundred years with the best of results. All this evidence was shown to prove that the brick was the equal in every respect to the clay product. Government tests and reports meant more than any other thing, but the one fact lacking was the actual knowledge of the test of time.

To satisfy this grave doubt, I saw this brick tested for strength, and by fire, water and freezing, and but one verdict could be reached; that it was the equal of any clay brick on the market. The result convinced me of the advisability of using the brick and I have since used it or advised its use in several buildings of more or less importance, and that, too, without regret, but you, as manufacturers and dealers, must not lose sight of the fact that you will probably have to convince most every other architect of the value of your product and that, too, in much the same manner as you did me, for we are more or less human, though some of us are not, being from Missouri.

Our attitude, then, towards your product is either negative, neutral or enthusiastic, depending wholly upon your ability to present convincing evidence of its merits.

I believe, however, that you will find us open to all reasonable arguments and for the most part willing to give a meritorious article a fair trial and you must depend upon your product to do the rest.

Like every new product sand-lime brick has much to contend with; the prejudice of a prospective customer, even though he be the client of a convinced architect, is sometimes impossible to overcome; the fierce rivalry of competi-

* Read at the Columbus meeting of the National Association Manufacturers of Sand Lime Products.

tion with an old and established product is often too strong to successfully resist even with the advantage of a reduced cost; and the enmity of labor and other interests are too well known to need any comment by me.

In conclusion, gentlemen, I may perhaps be permitted to offer a little advice; do not use a laboratory-made brick as your sample, but show the actual product of your plant and, if required, samples of its ingredients; make an effort, by concerted action if necessary, to overcome all unjust competition and the spiteful actions of those who would be gainers thereby, but be careful in so doing that you transgress no laws or commit no acts which would compromise you in the eyes of those of our profession to whom honor means more than wealth, and a satisfied client more than new business.

It is needless for me to suggest that you use every possible effort to improve the quality and value of your product. Your presence here indicates your desire to do this. Let me suggest that all efforts made towards the standardizing of your product both as regards size and quality and any attempts you may make to produce various texture and color effects will in my opinion be steps in the right direction and will, if successfully accomplished, materially increase its sale.

There is one defect in your product which should receive your earnest and careful consideration; namely, its tendency to spall on the edges and corners. I do not presume to state the cause or causes of this tendency; it may be due to lack of homogeneity, it may be the result of the processes of its manufacture, or it may be due to failure to properly season or cure the finished product, but whatever the cause, the elimination of this defect will, in my opinion, materially enhance the value of and the market for sand-lime brick.

Your product is comparatively unknown, your industry in its infancy, your future is and will be entirely dependent upon your own actions and efforts taken both individually and collectively. Your market, however, is world-wide, and personally I see no reason why your prospects for success are not as good as those of any other comparatively new product, and I believe that I am safe in assuring you, gentlemen, that those members of our profession whose friendship is really worth having, that is those of us who, after being convinced of its value and artistic merits, are willing to stand by their judgment and use your product solely because of their belief in it, may be depended upon to extend to you the cordial sympathy and aid which we presume you desire to secure and without which your ultimate success will undoubtedly be a question of a far greater expenditure of time, labor and money.

BREAKS ITS OWN RECORD IN PRODUCTION

The Monongahela (Pa.) Clay Manufacturing Company has broken all records in respect to its output, and in fact has over-reached its supposed capacity by 40 per cent. In one day 68,500 brick were turned out, the capacity of the plant being estimated at 50,000.

H. B. Simpson, manager, states that advance orders insure work for the two months coming and an additional rush of orders is also expected.

CLAYS AND SHALES IN CLARION CO., PA.

The clays and shales of Clarion County, Pa., form the subject of a paper by Edwin F. Lines, in the United States Geological Survey's "Contributions to Economic Geology, 1906" (Bulletin 315). The area considered in the report is that known to the Survey as the Clarion quadrangle, the geology of which has been studied for publication as a folio of the Geologic Atlas of the United States.

Both clays and shales are abundant within the quadrangle. Shales that are probably suitable for the manufacture of brick and tile are scattered over most of the region, and in some places are readily accessible to lines of transportation. The clays include both the flint and plastic varieties, but the latter have been little worked. The workable deposits of flint clays, so far as known, are confined to the northern part of the area. The clay was formerly shipped to a considerable extent as raw material, although it had to be hauled several miles by wagon to the railroad, but it has not been mined for many years and the old strippings are now largely covered up. There has been recent revival of interest in the clay, however, as a result of the beginning of construction of a new railroad which will pass near some of the best deposits.

The table of geological formations given in the paper shows that eleven clay beds are associated with the same number of coal horizons. Two and possibly three of these beds contain flint clay; the other clays are of the plastic variety. At present there are but three clay-working plants in the quadrangle. In the future development of the clays of this area the flint clay associated with the Lower Kittanning coal seems to offer the greatest possibilities. Although this clay is not equal in quality to the best flint clays on the market, it nevertheless makes a good fire brick. It is quite possible, too, that the plastic clay associated with this flint clay, if used on the spot, could be made to furnish the necessary bond. Coal and natural gas are available in nearly all parts of the region, and afford cheap and efficient fuel.

BOY SAVES TRAIN AND PASSENGERS

Robert L. Jones, Suffolk, Va., today averted an awful accident on the Seaboard Air Line and perhaps saved the lives and limbs of many passengers.

Young Jacobs, who works at the brick plant of the Suffolk Clay Company, of which his brother, Harry L. Jacobs, is general manager, discovered a broken rail not far from the brick plant and about a mile from Kilby station.

More than a foot had been broken from one of the rails. This was on a grade and an embankment.

The northbound passenger train was nearly due. Jacobs hustled to a telephone and notified the Suffolk office which wired to Kilby and had the train stopped. In the meantime Jacobs remained on the scene, ready to flag the train in case it passed Kilby.

The train was held until another rail could be substituted for the broken one.

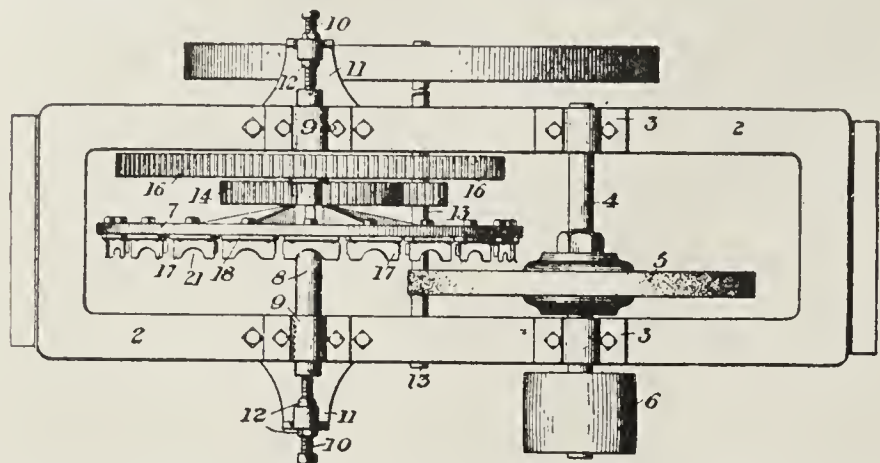
It is supposed that there was a flaw in the rail which had been broken by a freight, recently gone. The freight had passed slowly having stopped at a tank for water.

This makes the fourth time Jacobs has discovered defective rails near the same point.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

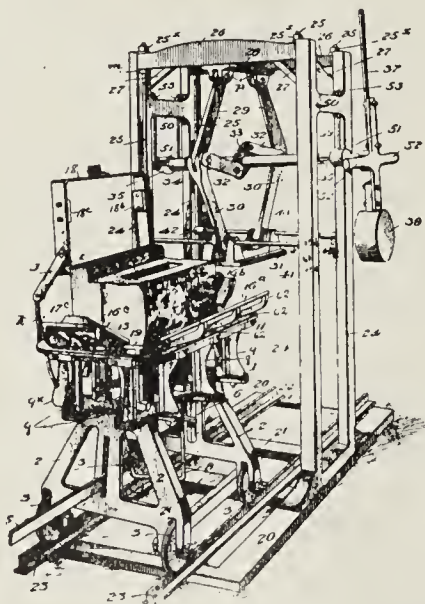
868,577. Machine for Grinding and Finishing Tiles and Other Articles. William T. Nicholls, Wellsburg, W. Va., assignor to The Monarch Tile Company, Weston, W. Va., a Corporation of West Virginia. Filed Oct. 20, 1905. Serial No. 283,620.



In a grinding machine for the purpose described, the combination with a grinding wheel or disk, of a relatively slow-moving carrier having upon one face a plurality of spring clips or holders secured thereto and composed of resilient clamping members, having an edge stop for the articles held therein; substantially as described.

869,271. Machine for Making Building-Blocks. Edward H. Somers, Urbana, Ill., assignor of one-half to Frank A. Somers, Urbana, Ill. Filed June 22, 1906. Serial No. 322,887.

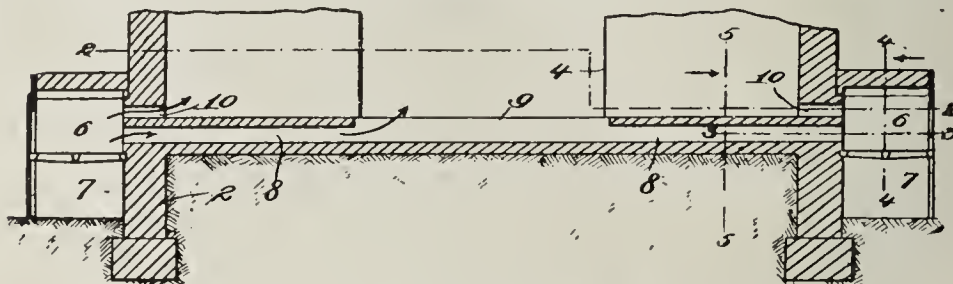
In a machine for making building blocks, the combination of a support; a mold-box mounted thereon free to move relatively thereto; a hopper mounted on said mold-box free to move to and from operative position thereon; and mechanism by which the movement of said mold-box relatively to its said support moves said hopper to and from operative position.



In a machine for making building blocks, the combination with suitable supporting members, of a pair of adjustable cross-beams mounted therebetween; two pairs of co-operating links, one link of each pair being pivotally secured to said cross-beams and the other link of each pair being secured to a presser-block; said presser-block; a shaft rotatably mounted in hangers; said hangers adjustably mounted in said supporting members; and means operatively connecting said links with said shaft, whereby the rotation of said shaft causes said presser-block to be raised and lowered.

869,621. Brick Kiln. Jackson J. P. Casey, Chattahoochee, Ga. Filed March 28, 1907. Serial No. 365,050.

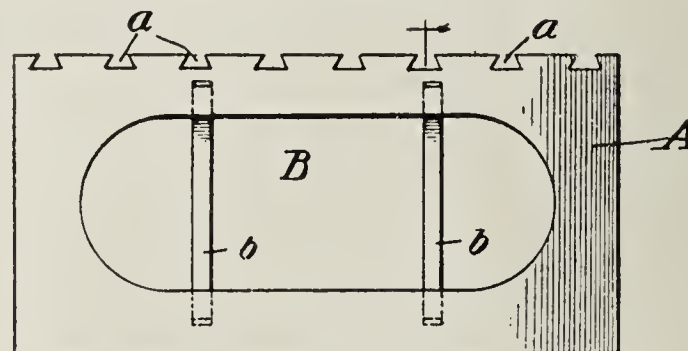
A kiln of the class described having a brick-receiving chamber, furnaces at opposite sides of the brick-receiving chamber, having combustion chambers, flues formed directly in the base of said brick-receiving chamber and connecting the combustion chambers of the respective furnaces and each having a single outlet substantially, centrally between its ends, opening into the interior of the brick-



receiving chamber, the width of the outlets being substantially the same as that of the respective flues, and a second set of flues located above the first mentioned flues and extending from the combustion chambers into the sides of said brick-receiving chamber.

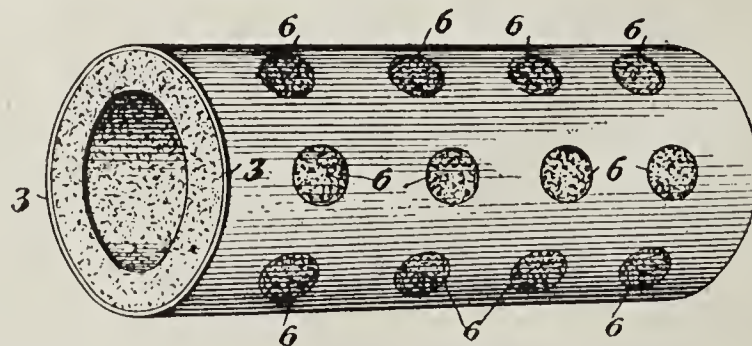
869,770. Building Block. William W. Birnstock, York, Pa., assignor of one-half to Matthew G. Collins, York, Pa. Filed October 31, 1906. Serial No. 341,419.

A hollow building block formed with continuous side and end walls and having a single central elongated opening between the side and end walls extending vertically through the block, and a pair of spaced reinforcing metal struts extending across the opening, and having their opposite ends embedded in the front and rear parallel walls of the block, said struts being arranged midway of the vertical height of the block to form handles accessible from either open side of the block, and the struts being parallel with each other, and at equal distances from the ends of the block for convenience in lifting the latter.



A building block formed with continuous side and end walls and having a single central elongated opening between the side and end walls extending vertically through the block, spaced reinforcing metal struts extending across the opening and having their opposite ends embedded in the front and rear walls of the block, said struts being arranged midway of the vertical height of the block, the inner face of said block being provided with plaster receiving grooves.

869,266. Tile. John F. Schwartz, Alma, Mich. Filed July 30, 1907. Serial No. 386,262.

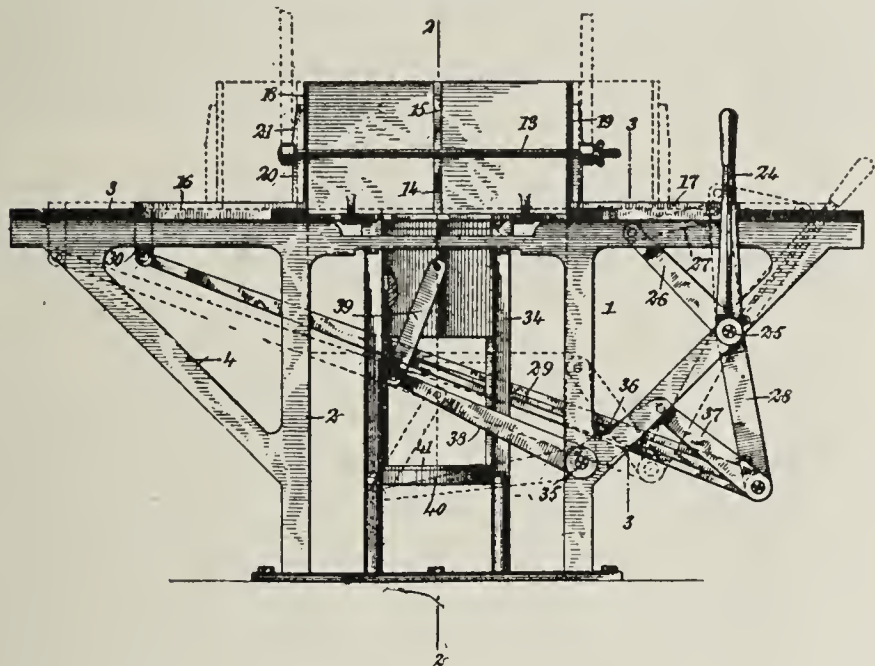


A tile consisting of a cement body, and an exterior layer of protecting material retained on the tile by the adhesive character of the cement.

A tile consisting of a cement body, and an exterior layer of paper or other suitable material permanently united with the cement body and provided at intervals with apertures for exposing portions of the outside cement.

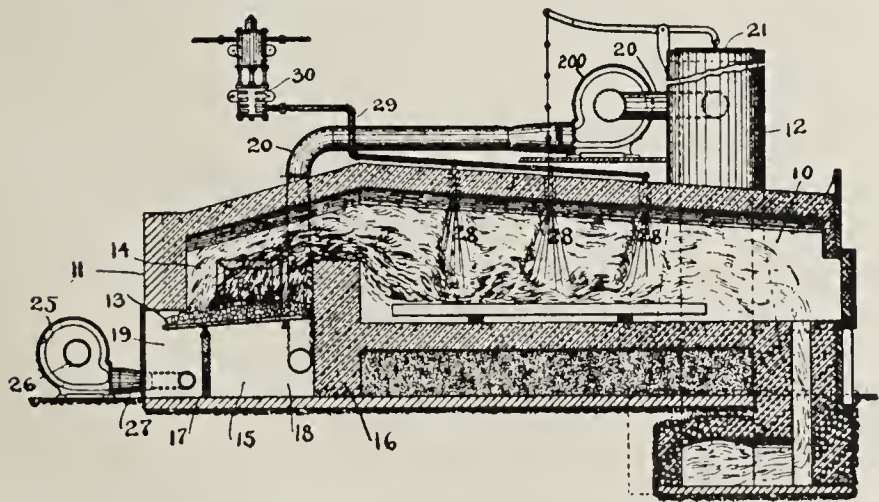
869,828. Building-Block Mold. Charles J. T. Cordes, Waldwick, N. J. Filed May 11, 1907. Serial No. 373,027.

In a molding machine, in combination, a frame, a fixed side wall, a second side wall hinged at the lower edge of said frame, guides formed on said frame between said side walls, slides moving on said guides and having end walls adapted to come into position to form a mold with said side walls, a lever, mechanism connecting said lever with said slides for advancing or withdrawing the same, core prints carried by the inner faces of said end walls, and



In a molding machine, in combination, a frame having oppositely disposed guides, slides mounted movably on said guides and having end walls with core prints formed on the inner faces thereof, a main core print, means for guiding the same to advance into position between said first core prints, said core prints having means at the meeting edges thereof for supporting anchors in the interior of the mold, a fixed side wall, a movable side wall hinged to said frame, a lever, mechanism connecting said lever with said slides and said main core print for advancing or withdrawing the same simultaneously, and a yoke adapted to hold said walls in position.

869,485. Combustion Process. Byron E. Eldred, Bronxville, N. Y., assignor to Combustion Utilities Company, New York, N. Y., a Corporation of New York. Filed Dec. 15, 1904. Serial No. 236,915.

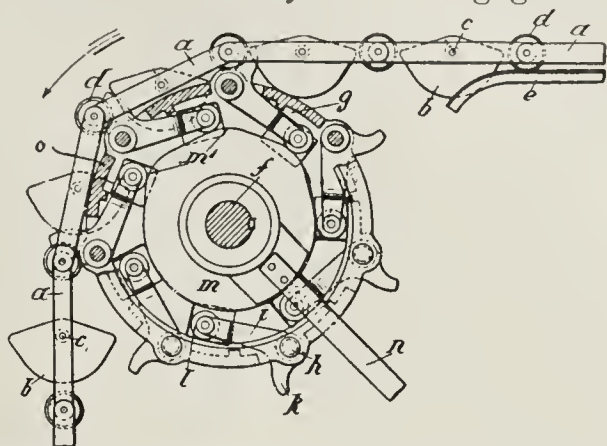


The process of applying heat in a reverberatory furnace which consists in supplying to the heating chamber of such a furnace a compound stratified flame current arising from fresh fuel cool-coked in the fire-box thereof by a draft current containing an endothermically acting body and from the combustion of coke in the same fire-box, the coal furnishing a relatively cool, reducing flame stratum and the coke a relatively hot oxidizing flame stratum.

869,488. Driving Mechanism for Conveyers. Georg

von Hanffstengel, Stuttgart, Germany. Filed Jan. 15, 1907. Serial No. 352,430.

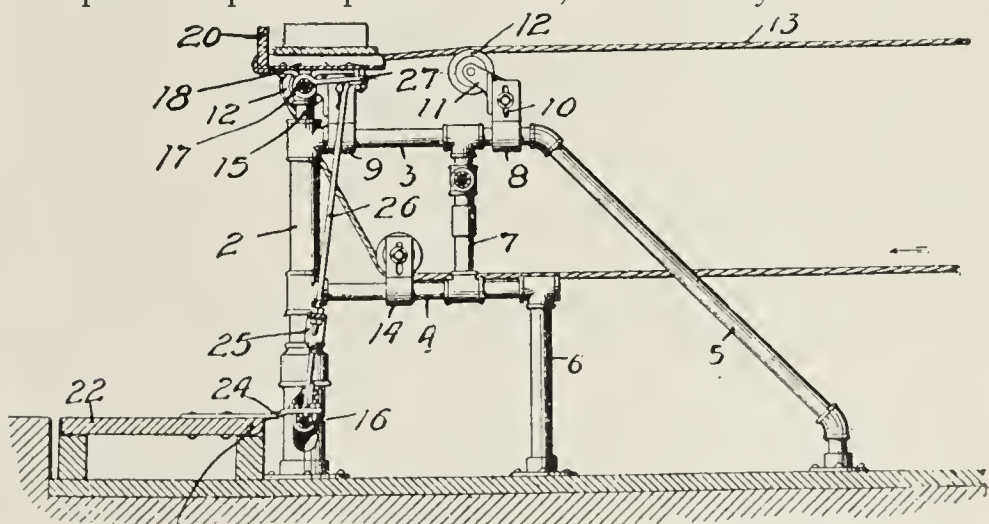
In a driving mechanism for conveyers and the like, a driving wheel and a conveyer passing around and engaging said wheel, the latter having levers pivoted thereto at intervals, one end of each lever projecting from the wheel and constituting a catch and the other end of each lever provided with a roller, and a fixed disk whose periphery is engaged by the rollers aforesaid as the wheel revolves and is formed to move the aforesaid catches gradually into engagement with the conveyer and to positively maintain said engagement while the conveyer is in engagement with the wheel.



In a driving mechanism for conveyers and the like, a driving wheel having levers pivoted thereto at intervals, one end of each lever projecting from the wheel and constituting a catch and the other end of each lever provided with a roller, and a fixed disk whose periphery is engaged by the rollers aforesaid as the wheel revolves and is provided with a succession of separate cams.

870,521. Dump-Table. Frank S. Peck, Menomonie, Wis., assignor of one-half to S. J. Hewson, Minneapolis, Minn. Filed March 25, 1907. Serial No. 364,475.

The combination, with a suitable frame having sheaves, of cable conveyers operating over said sheaves, a vertically moving table arranged between said conveyers and normally below the level of the upper section of said conveyers, said table being adapted to receive loaded pallets of brick, the pallets projecting beyond the ends of the table, and means for raising said table to lift it and the pallet thereon temporarily above the level of said cables, and said table returning by gravity when released, to its normal position to deposit the pallet upon the tables, substantially as described.



The combination, with a frame having sheaves mounted therein, of cable conveyers operating over said sheaves, a vertically moving table arranged between said conveyers and normally below the level of the upper portion thereof, said table being adopted to receive loaded pallets of brick, the pallets projecting beyond the ends of the table, and a tilting platform connected with said table and arranged to elevate the table and pallet, said platform being tilted by the weight of the workman stepping thereon, and the table returning by gravity to its normal position when the platform is relieved of the weight, whereby the pallet will be automatically deposited upon the conveyer, substantially as described.

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Vol. XXXI.

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No. 11

"I like to read American advertisements. They are in themselves literature, and I can gauge the prosperity of the country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the very time that advertising should be the heaviest. Ninety-nine out of every hundred merchants advertise most when there is least need of it, instead of looking upon advertising as the panacea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick and Tile Association will be held at Des Moines, Iowa, January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay Workers' Association will be held at Milwaukee, February 12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association of Manufacturers of Sand-Lime Products will be held at Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic Society will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d and 4th 1908. Headquarters at the Southern Hotel.

The twenty-second annual convention of the National Brick Manufacturers' Association will be held at Columbus, Ohio, February 3d to 8th 1908. Headquarters at the Southern Hotel.

The thirtieth annual convention of the Illinois Clay Workers' Association will be held at Peoria, Ills., Jan. 14-15 and 16th 1908. Headquarters at the National Hotel.

Revenge is never so sweet as when we refuse to entertain it.

Subscribe for THE CLAY RECORD today. You will get from now to 1909 for One Dollar.

Beware of the man who is affected with excessive politeness. He probably has designs on a slice of your bank balance.

Did you ever think what a lot of good you might have done in the world if you had n't made up your mind to begin tomorrow.

The start don't count—anybody can start, but it is the fellow who keeps up the persistent jog that wins. This is true in advertising.

In this issue of THE CLAY RECORD appears an article on the "Steam Engine as applied to Brick Yard Practice," by W. S. Stafford, a well known mechanical engineer. This article alone is worth to our readers many times the price of the whole year's subscription. We will favor our readers in the next issue with a splendid article on "Steam Boilers as applied to Brick Yard Practice," by the same writer. This will be followed by another article on "Economical Power plant Auxiliaries." Can you afford to miss this series?

CHARLES A. REED

Charles A. Reed, president and treasurer of the Chicago Retort & Fire Brick Company, died December 3rd, 1907. Mr. Reed was born in Montpelier, Vermont, February 12, 1837. During the early part of his life he was a banker, but always had an inclination for manufacturing.

In 1887, he became connected with the Chicago Retort & Fire Brick Co., then a small corporation with one plant located at Chicago, and until shortly before his death was actively engaged in the management of the company.

Owing to his clear-sighted, conservative judgment, the company has had a steady growth and during the past year had erected, in addition to the Chicago plant, a new and modern plant at Ottawa, Illinois, which was completed and in operation in time for him to see the fulfillment of his work.

Mr. Reed was a man of sturdy New England character, who had but one way of doing business; with him, if a thing was right, there was nothing more to be said. His honesty of purpose and fairness of spirit made him beloved and respected by all who knew him and his loss will be keenly felt by his associates.

He was taken for burial to his old home in Vermont, where his family had lived for three generations.

He is survived by a widow and two daughters, and a son who has been associated with him in business for the past twenty years.

OBITUARY

James L. Caskey, for twenty-one years a resident of Los Angeles, Cal., and connected with the California Clay Mfg. Company, died at his home, 640 W. 40th street, after a short illness.

Benjamin Hadley, an eccentric millionaire, died at his home in East Somerdale, Mass., of old age. He was 90 years old, never married and at one time ran a brick yard. He had no time to shave and never ate in a hotel or restaurant.

Charles A. Reed, president of the Chicago Retort & Fire Brick Co., died at his home, 4846 Washington Ave., Chicago, after a short illness. He was 71 years of age, and built up a large fire brick business, having plants in Chicago and at Ottawa.

FIRE! FIRE! FIRE!

The estimated loss by the fire which destroyed the Drury Brick & Construction Co.'s plant at York, Pa., is placed at \$12,500. The insurance is \$9,100.

The Manchester Ave. storage sheds of the Hydraulic Press Brick Co., St. Louis, Mo., were destroyed by fire causing a loss of life and damage to property to the extent of \$7,000.

The blacksmith shop of the Gadsdell (Ala.) Brick Co.'s plant on the east side of the Coosa river burned the shop and damaged the plant estimated at \$6,000 partially covered by insurance.

An overheated kiln set fire to the drying sheds in the Brush Brick Works, 975 Bailey Ave., Buffalo, N. Y., and the entire plant narrowly escaped destruction. The loss did not exceed \$1,500, fully insured.

Fire did \$30,000 damage to the plant of the Baltimore (Md.) Vitrified Clay Co., located near Westport. The clay dryer, engine and boiler rooms and storage rooms were ruined. Plant fully covered by insurance. Joseph R. Wilson is the manager of the company.

BUILDING OPERATIONS FOR NOVEMBER

According to expectations, building operations during the past month have suffered a considerable decrease, as compared with November, 1906. Official reports from forty-seven cities throughout the country, received by The American Contractor, Chicago, and tabulated, show a loss in the aggregate of twenty-nine per cent. Fifteen cities scored a gain from 1 to 95 per cent, while thirty-two show a loss from 10 to 68 per cent. Building construction is generally considered the most sensitive of all financial undertakings, hence this decline may be taken as the most serious retrenchment in any industrial line. Plans in great numbers are ready and waiting for a subsidence of the financial "flurry," when it is confidently expected that building will assume its normal course. Among the cities that scored an increase are: Birmingham, 9 per cent; Buffalo, 50; Cleveland, 8; Cincinnati, 32; Detroit, 95; Milwaukee, 29; Minneapolis, 12; Mobile, 31; Omaha, 10; St. Paul, 16; Scranton, 38; South Bend, 18. The principal losers were: Chicago, 52; Duluth, 58; Evansville, 81; Harrisburg, 64; Hartford, 65; Indianapolis, 62; Louisville, 65; St. Louis, 66; Trenton, 58, and Washington, 68.

ACCIDENTS, DAMAGES AND LOSSES

Three firemen were pinned under the burning roof of the storage yard of the Hydraulic Press Brick Co., St. Louis, Mo., and badly burned and injured.

T. M. Hess is suing Jacob Rich and Frank Riddle to recover \$12,000, the value of 120 shares of capital stock of the Millville (N. J.) Brick Mfg. Co.

The schedules of the bankruptcy of Kohl-Hepp Brick Co., 439 Fifth Av., New York and plant at Sayreville, N. J., show liabilities \$135,045 and assets \$220,522.

The Montello Brick Works, Reading, Pa., was adjudicated a bankrupt Dec. 10th in the U. S. Court at Philadelphia, upon motion of an attorney for creditors.

The sheriff will sell a portion of the personal property of the Fitzgerald Brick Co., Coxsackie, N. Y., to satisfy a judgment of W. R. Church and Joseph Borono, amounting to \$300.

Peter G. Van Zandt, treasurer of the Independent Brick Co., Trenton, N. J., was found unconscious in his apartments as a result of a fall while on a business trip to New York.

A petition to have adjudicated as bankrupt the American Pottery Supply Co., Baltimore, Md., of which a receiver was appointed in September, was filed in the U. S. District court.

Charles A. Carey, father of a boy that was killed at the plant of the Utica (Ill.) Fire Brick Co.'s plant last summer, has begun suit asking for \$10,000 damages for the death of his child.

A jury has returned a verdict in which Jeff Bannon, Louisville, Ky., is required to surrender to the estate of his father, Patrick Bannon, Sr., \$60,000 of stock in the P. Bannon Sewer Pipe Co. and the Kentucky Vitrified Brick Co. The suit was brought by the other children.

Andrew J. Peterman of Fredericksburg, O., and E. R. Hammond of Pittsburg, Pa., have been appointed receivers of the Fredericksburg (O.) Brick, Coal & Clay Co. The plant was completed three years ago but was never operated owing to disputes between the manager and promoters.

BRICK PLANTS WILL RUN ALL WINTER

The Coffeyville (Kan.), Vitrified Brick and Tile Company has sold over 1,250,000 brick in the last few days. From the way recent orders have come in the company will probably be able to keep the plant in operation all winter.

All business is being conducted on a strictly cash basis. The company's chief trouble in the past has been to dispose of the bonds received from the various cities to which paving brick were furnished. During the last few days the company has disposed of six per cent paving bonds.

Small orders are coming in again and the company believes that whereas it looked as if it might be necessary to shut down for the winter a week or two ago, it now looks as if the company will be able to operate its plant all winter. The increase in orders also speaks well for the financial condition of the cities in this section of the west, and means that many men who had feared a lay-off, will be given employment.

CALENDARS FOR NINETEEN EIGHT

The 1908 Kalender of the Tonindustrue Zeitung of Berlin, Germany, has made its timely arrival and like the many former years is really a booklet in three parts. It is by far one of the most desired that comes into the office of the CLAY RECORD.

R. M. & W. H. Wiles Company, Grassy Point, N. Y., are on hand as usual with their art calendar. This year it is from the celebrated painting by Waugh, "The Little Pig Went to Market." It is highly colored and is an ornament to any house or office.

E. M. Freese & Company, Galion, Ohio, are as usual sending out a calendar that is very attractive. It is quite different from those sent out in the previous years, but is just as much sought for and is very handsome.

THINKS COMPANIES SHOULD BE SEPARATE

"What do you think of the plans discussed for the reorganization of the Montello group of securities?" was the question asked of Albert A. Gery, president of the U. S. Brick Company, Reading, Pa., and heavily interested in the three companies.

Mr. Gery replied as follows:

"I have always thought and still advocate the separation of the Montello Brick Works and the Montello Brick Company. As a stockholder in the latter I would not consent to put my interest into a new company in which all holdings were to be rated alike, as it would greatly depreciate the value of such holdings.

"The proper thing to do in my opinion is the permanent separation of these interests. Let the Montello Brick Works take the Oaks plant, paying enough for the property to permit the Montello Brick Company to put into operation the plants which it owns at Wyomissing and Montello. This would be fair to every interest and would leave the Montello Brick Works to develop a proposition in which every dollar can be worked out. The plant is a model in every way, was run for months as a big money maker and this record can be repeated if proper attention is given to it. I favor a division which would result in making two companies successful manufacturers of brick, and save a lot of money for the holders of both securities."

MORE THAN LIKELY BRICKMAKING WILL BECOME A PERMANENT FEATURE

The manufacture of brick at the Prairie View (Texas) State Normal and Industrial College, which constitutes a new department of practical instruction for the students recently added to the institution, may now be said to have emerged from the experimental stage, the innovation having only been introduced on trial, and it is more than likely that it will become a permanent feature in the school. During the week just closing 50,000 brick were molded, notwithstanding the adverse weather condition, which interfered considerably with the work, and within a fortnight it is planned to burn the first kiln, when the success or impracticability of the enterprise will be established to a certainty. Samples of the college output are commented favorably on by those conversant with brick making, and specimens have stood splendidly the test of burning.

A PAVING BRICK COMPANY INSURES ITS WORKMEN

The following announcement by the Streater Paving Brick Company, Streater, Ill., just made public, is a policy which might well be followed by other corporations employing large numbers of men. This company has in years past made a practice of presenting each employe with a Christmas turkey, but it feels that it better provides for dependent families by contributing a paid-up accident policy, and does so at even greater expense. Following are the contents of a circular explaining the conditions:

Hitherto the insurance carried by this company against accidents has been in the form of protection against legal liability from any damage that might accrue as the result of an accident in its works. In addition to this we have now taken out a collective accident policy which insures all of our employes against accidents while regularly employed, and which will compensate them in the event of any disabling injury. The scale of benefits is as follows:

1. In the event of death within ninety days, one year's wages, not exceeding \$1,500.
2. For the loss of two limbs or two eyes, a sum equal to the amount payable under the policy at death.
3. For the loss of one limb, a sum equal to one-third of the amount payable under the policy at death.
4. For the loss of one eye, a sum equal to one-eighth of the amount payable under the policy at death, not exceeding \$200.
5. In the event of temporary disability, one-half the weekly wages for a period of not exceeding 26 weeks, such sum not to exceed \$500.
6. For such medical attendance as may be required on account of such accidents as are covered by this insurance.

TESTS OF REINFORCED CONCRETE BEAMS

Bulletin No. 14, Tests of Reinforced Concrete Beams, series of 1906, has just been issued by the University of Illinois Engineering Experiment Station. The tests described are a continuation of the tests discussed in Bulletin No. 4. The topics investigated include the effect of quality of concretes upon the strength of beams, the effect of repetitive loading upon the action of beams, and the resistance of beams to diagonal tension failures. The results of the investigation of diagonal tension failures throw light upon the amount of the vertical stress which may be allowed in reinforced concrete beams not having metallic web reinforcement. The resistance of beams to diagonal tension may be the controlling feature of relatively short beams, and as such failures occur suddenly and without much warning, a knowledge of the resistance of the concrete is essential. Some beams gave surprisingly low values and it seems evident that the values allowed by many city building ordinances are higher than should be recommended. The tests of concrete columns and reinforced concrete columns and of reinforced concrete T-beams for 1906 have already been published.

L. P. Breckenridge, Director Engineering Experiment Station.

Urbana, Ill., Dec. 14, 1907.

TWENTY-TWO MEN HURT BY AIR TANK EXPLOSION

Two men were probably mortally injured and twenty others suffered bruises when a big compressed air tank exploded in the Staten Island terra cotta works at Tottenville.

Michael Gaul, of Kreischerville, sustained a fracture of the skull, fractures of three ribs and internal injuries. William Gibbs, of Tottenville, was hurt about the legs and he is probably injured internally.

The explosion occurred about 8 o'clock. Most of the residents of Tottenville were in bed at that hour, it being a bleak, slow night on the island. Five minutes after the roar that shook the district took place Main street looked even livelier than it does in the daytime. The residents thought an earthquake had visited their town.

Just what caused the big tank to explode is not known, but presumably some defect in the piping led to the blow-out. The twenty men beside Gaul and Gibbs who were hurt were flung off their feet and cut by flying glass and pieces of wood and brick.

Soon the two-story building was in flames. The Tottenville fire department fought hard to save the structure, but their efforts were futile. This morning the building is simply a mass of tangled, smoking debris.

BRICK GO DOWN TO THE PRICE OF FIVE YEARS AGO

Prices of good brick are down to the level of five years ago, when the cost of manufacturing and handling was much lower than it is today. It cost close to \$5 per thousand to put brick in New York five years ago, and since then a number of strikes by laborers at the yards, boatmen and by handlers in the city have raised that level so that manufacturers and dealers are worse off than when quotations were formerly at the low figures. The opportunity presented to builders and those who can use brick would be extremely exceptional if it were not for the currency difficulties—so often here spoken of in the last seventeen months that nothing can be added to the score.

Sales are averaging about fifty cargoes weekly, but deliveries are slow on the part of dealers, so that the barges are longer unloading than ordinarily. The slow circulation of currency is thus reflected in the slower movements of the boats between the market and the works.

MR. DREW GOES TO GEORGIA

Mr. George Drew, of Chicago, Ill., arrived in Columbus, Ga., the 9th, to take charge of the manufacturing department of the Muscogee Brick & Terra Cotta Co. As a manufacturer Mr. Drew stands second to none, having had experience for twenty-five years in some of the largest plants in the United States.

The Muscogee Brick & Terra Cotta Co. have one of the best equipped and up to date plants in the southern states, and 100 acres of first-class brick-clay, enough to last 50 or 75 years. With the improved methods of this plant it is possible to run every day during the year.

Mr. John T. Fletcher, president of the company, says that the company will have a capacity of over thirty million brick each year, and they can supply enough first-class brick to build a city.

FANCY POTTERY WILL COST MORE AFTER JANUARY FIRST

All specialty pottery ware will be increased 5 per cent after January 1. This was decided upon by representatives of sixty pottery concerns at a meeting held in Pittsburg, Pa. The manufacturers declared that owing to the increased cost of labor the advance was necessary. The makers of general ware declared that it would be inadvisable to raise the price on such ware and agreed to maintain the present list for the coming years.

The specialties include fancy vases, bric-a-brac, novelties in fruit dishes and other special shapes in table ware.

T. A. McNichol, of East Liverpool, O., presided, and Charles Ashbaugh of Wheeling acted as secretary. The executive committee gave out a statement calling attention to the fact that the increase was made on luxuries only and did not affect the staples.

Trenton and Baltimore manufacturers were largely represented, though the Ohio companies controlled the meeting.

The Trenton potteries were represented by the following men: A. G. Dale of the International Pottery Company; Charles Howell Cook of the Cook Potteries Company; Daniel Willets of the Willets Pottery Company; John M. Pope of the Mercer Pottery Company and John E. Norris of the Anchor Pottery Company.

AKRON FIRMS' NEW SHIPPING ARRANGEMENT

A number of large shipping concerns in Akron, O., including the Robinson Clay Product Company, the Taplin-Rice and the B. F. Goodrich Company and the Diamond Rubber Company have joined in a movement toward the organization of the Ohio Shippers' association for the purpose of influencing legislation and rulings of the state and interstate commissions to bring about more favorable conditions for shippers. The organization is a large one and has been promoted by an agent from Columbus, who has visited other cities of the state, as well as Akron, to get subscriptions.

The movement has already brought about an appeal to the state railway commission for the betterment of car service rules, which were promulgated by the commission last May. The idea of the association, as it is understood, is also to bring pressure on the interstate commerce commission.

CONTRACTORS MUST TAKE UP BRICK PAVEMENTS

Three city blocks of paved street have been ordered torn up by Director Andrix of the Columbus, O., service board because of the character of the material with which the street has been laid. The contractor affected by this order is W. J. Burns and the partly paved street which is ordered torn up is Fulton street, for the construction of which Burns has the contract.

According to the statement of Director Andrix made at the meeting of the service board, he pulled one row of brick out of the street and found all but about nine of them chipped and otherwise badly handled. Mr. Carlisle, of the Carlisle Clay Brick Company, appeared before the board and talked against the order of Mr. Andrix. He offered to furnish a guarantee bond that the street would outlast its time limit.

CLOSE BRICK PLANT FOR LACK OF COAL

As a result of inability to secure fuel and the uncertainty of securing it regularly in the future, the Barber Asphalt Company closed its big plant in South Des Moines, Ia. for an indefinite period. Ninety-six men were thrown out of employment. Paul Beers, manager of the plant, said that he did not believe the plant would be reopened until spring.

"The closing of the plant is entirely due to the strike of the coal miners," said Mr. Beers. "We had lots of orders for brick and expected to run all winter. We ran short of fuel, although our contract with the Norwood White Coal Company provided that we were to be furnished coal regularly all winter. The company officials stated that they had been assured the miners would resume work and that fuel would be furnished at once. No fuel came, the company telephoning late in the day that it was uncertain whether they could fill the order and that there was liable to be uncertainty even after that.

"The whole thing simmers down to the unreasonable demands of the coal miners in the Des Moines district. If they had accepted one-half clearing house certificates everything would have been all right. Now they have forced us to close down, throwing innocent men out of employment. I presume there are other plants in the same boat that we are in. Eventually it will hit the miners and they will get a good dose of their own medicine."

SUPREME COURT OF MICHIGAN DECIDES THAT CITY OF DETROIT CANNOT MAKE ITS OWN BRICK*

The supreme court has handed down a decision that the city of Detroit cannot operate a municipal brick plant. Two years ago the Detroit council appropriated \$50,000 to establish a municipal paving brick plant. A contract for a plant was let to Frank Reich for \$45,000, and work was started. Local brick men attacked the city's right to manufacture brick under the constitutional provision which prohibits municipalities from engaging in works of internal improvement.

THE TREATMENT OF BELTS AND ROPES

The above title is that of an eighty-eight page booklet which has been published by the Cling-Surface Company, of Buffalo, N. Y. It states that Cling-Surface is a belt food, and is put on belts to get special results. It makes and keeps the belt mellow, pliable and durable and makes it pull and let go of the pulley.

This Cling-Surface is used by many of the large manufacturers in all branches of the trade and is used on any kind of belt. Write for a booklet and mention THE CLAY RECORD, and it will be sent by return mail.

RETRENCHMENT IN OHIO

Several thousand employees of sewer pipe plants in the northern part of Ohio valley have agreed to accept a reduction of 20 cents per diem on the scale of wages paid. It is understood, however, that as soon as the conditions existing in the sewer pipe trade improve the various firms will resume the payment of the present scale of wages. This is expected to come before April 1, 1908.

LEADING ARCHITECTS TRYING TO CREATE MORE ARTISTIC APPEARANCE IN CITY

A concerted effort is being made by the leading architects of Washington to create a more artistic effort in the general appearance of the city by specifying in plans the use of brick and stone in harmonious colors, and to frown down attempts to use materials whose tendency is to destroy the art effect in the locality in which the building is to be located. Many years ago it was considered the correct thing to hide the brick walls of a building by an application of stucco to the exterior and drawing lines in the stucco while wet to imitate stone or other material. These structures when completed appeared to be constructed of oblong blocks of stone which illusion remorseless time has destroyed. It is said that one of the qualities which made the application of stucco to brick walls popular was that it was capable of producing better effects than the crudely burnt brick of an earlier period.

This is no longer the case, for such changes have taken place in brickmaking and such a variety of clays are used that some of the best architectural effects are produced in that material. Two of the houses designed by Richardson and built in Washington are built of brick. A more recent specimen of domestic architecture is built entirely of brick, and while to the casual glance it may appear to be merely the ordinary kind, yet such is not the case, as it comes from a clay bank that has its distinctive shade of color. The entire output of that brick is used by the architects but is not so much used in the larger of houses for their clients.

MARLBOROUGH TO BE SOLD

The passing of the project to make a big cement plant at Marlborough, Lake County, Mich., was marked when Judge Swan, sitting in the federal court here, rendered a decree of foreclosure in the suit of the Union Trust Company of Detroit against the Great Northern Portland Cement Company at Baldwin, for \$657,781.75. The mortgage was given in 1904 and was for \$600,000.

The village of Marlborough was erected and the cement plant installed, only to be abandoned when it was found that the plant would not produce cement on a paying basis. The town of Marlborough and the cement manufacturing, together with the property on which Marlborough lake is situated, represents the entire assets of the company, and are liable to sale under the decree to satisfy the indebtedness.

MANUFACTURERS ARRANGE FOR TEST TO STOP ALLEGED DISCRIMINATION

The National Association of Manufacturers of Sand Lime Products has elected H. O. Duerr, Wilmington, Del., president; S. H. Smith, Wilmington, N. C., vice-president; Fred K. Irwin, Chicago, secretary, and N. E. Plumer, Buffalo, treasurer.

The insurance question has been adjusted temporarily by an arrangement for a test of sand, lime, brick and other building material before a committee of underwriters who now, it is said, discriminate against the sand lime products in making rates.

SAND OR LIME BRICK OR BLOCK NEWS

The Atlas Cement Brick Machinery Co., Detroit, Mich., has been incorporated with \$10,000 capital stock.

C. I. Clemens and Ben Norton, Rochester, Ind. will establish a concrete block and brick plant at Dalton, Ga.

The Portland Cement Brick Co., Portland, Oregon, has been incorporated with \$50,000 capital stock by L. D. Potter, E. J. Haynes and George W. Wilson.

The Gary (Ind.) Brick & Stone Co. has been launched with \$75,000 capital stock. They will manufacture building brick from sand and lime. George Baker and Capt. Hodson are interested.

Furman & Odiarne, Rockingham, N. C., have put up a concrete brick and block manufacturing plant. C. M. Furman, Jr., is the manager.

The Cement Machinery Co., Jackson, Mich., changed hands Dec. 1st, W. F. Cowham selling same to Sid L. Wiltse and J. C. Lautenstager.

M. H. Averam, an electrical engineer of New York City, is at the head of a company to organize the Aleco Stone & Brick Co., to build a plant at Tampa, Fla.

The Wilkesbarre (Pa.) Cement Brick Co. will remodel the old ice house on Jackson street so that they can be manufacturing cement brick by the middle of January.

The Chicago (Ill.) Concrete Block & Brick Company has been incorporated with \$5,000 capital stock. Incorporators are M. Schmidt, A. Breckler and M. Schreck.

The Saginaw Sandstone Brick Co., Saginaw, Mich., has closed its plant for the winter and will open as early as possible in the spring. Its sales have been 4,000,000 brick.

The New River Sandstone Brick Co., Roanoke, Va., has been incorporated with \$44,500 capital stock with G. A. Shiry of Bluefield, president, and R. E. Baldwin general manager.

The Peninsular Cement Stone & Construction Co., Jackson, Mich., will soon be organized to make concrete blocks, brick, etc. Sid L. Wiltse and J. C. Lauterstager are the owners.

The Nelson Cement Works, Nelson, B. C., has been capitalized at \$25,000 and will manufacture cement blocks and bricks. C. W. Bourke and W. F. Mondelay, the gentlemen interested, have purchased a site.

The Progress Brick Co., Schenectady, N. Y., have elected the following directors: Paul Schmidt, F. W. B. Schoradt, Joseph Gritzbach, Frederick Diemer, Chas. F. Berni, Chas. Roberts, Henry Nicklas and Conrad Baumgartner.

The 1908 officers of the National Association of Manufacturers of Sand Lime Products are President, H. O. Duerr, of Wilmington, Del.; vice-president, F. H. Smith, of Wilmington, N. C.; secretary, F. K. Irvine, of Chicago, Ill. and W. E. Plummer, of Buffalo, N. Y. treasurer.

Mr. Wm F. Stimmel, Kutztown, Pa., is installing at the present time the improved "Martin" patented rack pipe steam brick dryer system of 18,000 daily capacity, including the "Martin" automatic cable delivery system, this being installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

POTTERY NEWS ITEMS

A company will be organized to continue operation of the Huntington (W. Va.) China Co.'s plant. H. R. Wylie is in charge at present.

The Bell Pottery Co.'s plant at Columbus, O., was offered for sale by a master of the court and had no bidders. The property is valued at \$200,000.

The Columbus (O.) Pottery Co. at Chaseland, is preparing for an increased output the coming year and is building new kilns which will add to the capacity.

The Wood Pottery Co., North Augusta, Ia., of which P. Wood was at the head, has been sold to James P. Armstrong who represents a company that will reorganize the business.

The Phoenix Pottery Co., Mannington, W. Va., will build a \$75,000 to \$100,000 plant to manufacture table and toilet ware. George W. Bowers, of Wheeling, is organizing the company.

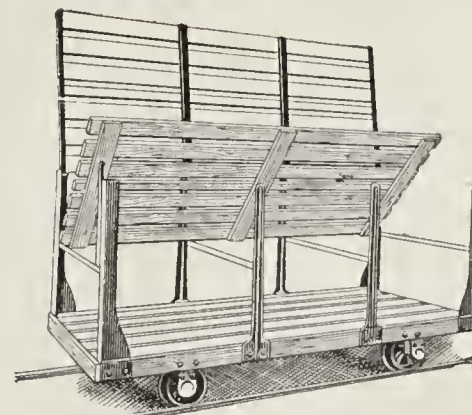
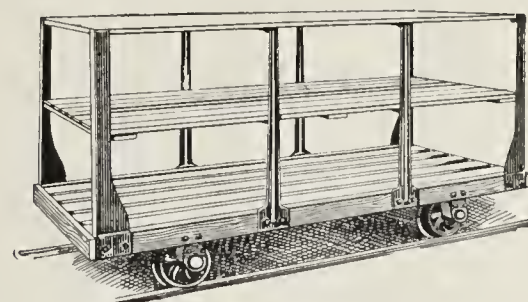
The Augusta (Ga.) China Co. has been granted a charter with \$20,000 capital stock. The directors are E. W. Herman, Abram Levy, E. F. Verdery, P. H. Roce, A. S. Hatch and J. L. Hunter.

Rapid progress is being made in constructing the new plant of the Van Briggles Pottery at Colorado Springs, Colo. F. H. Riddle says that they expect to have four kilns working at full capacity within six weeks.

The Ford City (Pa.) Pottery Co., which has been sold to the Cook Pottery Co., of Trenton, N. J., has started operations. The Cook interests also operate the Pennsylvania China Co.'s plant at Kittanning, Pa.

The Lightest Running Dryer Car Made

having a dust proof roller bearing
box made of steel. No oil needed.
Write for description and prices



Vulcan Iron Works

MASON CITY,
IOWA

MISCELLANEOUS ITEMS

A brick yard is to be started at Richardton, N. Dak., in the spring.

Vinita (Okla.) Brick Work's new plant is now in operation making about 40,000 brick daily.

James Logan, of Houston, Texas, contemplates putting in a large brick works at Tomball, Texas.

The Goldsmith Ceramic Machine Co., Hamilton, O., changed its name to the Ceramic Machinery Company.

The Flint Brick & Coal Co., Des Moines, Ia., captured \$30,000 worth of brick paving contracts this month in Des Moines.

H. H. Peterson, Holtsville, Cal., is having such a demand for building material that he has increased the capacity of the plant.

The Harland & Kuester Brick Works, at Ft. Perre, S. Dak., has commenced operations with a daily output of 50,000 brick.

The Byesville (Ohio) Sewer Pipe Works, to be built by Willis Morris, is now under way and will be pushed to rapid completion.

At the fire brick works at Philipsburg, Pa., the Harbison-Walker Refractories Co. have cut out Saturdays and now work but five days a week.

Surveyors are at work laying out the plant at Glen Easton, W. Va., for a brick manufacturing plant to be built by the owners of the Glen Easton Coal Co.

The Massillon (O.) Stone & Brick Co., shut down for a week to make necessary repairs so that they could run all winter in order to catch up with orders.

The Barbee Asphalt Co., Des Moines, Ia., has closed down their plant on account of the coal miner's strike and they not being able to get coal to burn the brick.

Coffeyville, Kansas, and Catskill, N. Y., are both furnishing Houston, Texas, with vitrified paving brick and blocks. A contract for paving approximating \$165,000 has been let.

All the machinery for the new brick works for W. W. Ellis & Son, Canton, Ill., has arrived and is being set into place. The manufacture of paving brick will be started in the spring.

The Bickford Fire Brick Co., Lock Haven, Pa., have bought the Curwensville (Pa.) Fire Brick Co.'s plant at trustee's sale and will have title to same and operate it within two weeks.

The present plant of the Gay Head Fire Brick Co., Somerset, Mass., is to be pulled down and new buildings to be erected after modern plans, suitable for the manufacture of all kinds of fire brick.

The Marshalltown (Iowa) Pottery Co.'s plant is to be turned into an enameled brick plant. J. F. Martin, the old superintendent, will have charge of the new company. Kansas City people are interested.

Mr. Wm. Kelley of the Frankford Brick Worke, Philadelphia, Pa., has just installed on his plant the "Martin" improved Style "A" steam power brick machine in combination with the horizontal pug mill, etc., which are being installed by the Henry Martin Brick Machine Mfg. Co., Lancaster, Pa.

George H. Polk, Scooba, Miss., is in the market for brick machinery.

Warden K. Lowden has registered the Utica Shale Brick and Pipe Co., St. Lambert, Quebec.

The Arkansas Fuller's Earth Co., Little Rock, Ark., is in the market for a dryer to dry their clay.

A clay deposit has been found in Woodbine, N. J., and is being utilized for the improvement of streets and grading purposes.

B. M. Hungerford, Aitkin, Minn., has had samples of clay tested by an authority, and will manufacture brick at Aitkin in the spring.

A. B. Roberts, receiver for the Montello Brick Works, Reading, Pa., closed down the Perkiomen plant the 10th inst. for the winter.

On account of a cancellation of a large order the plant of the Grand Ledge (Mich.) Clay Products Co. has been closed for the winter.

The Black Hawk Clay Mfg. Co., at Sears, Ills., are daily sending out pressed brick to Iowa and Illinois points and report the business good for this time of the year.

R. R. McArthur, of Brantford, Ontario, will represent the American Clay Machinery Co., Bucyrus, Ohio, in Canada, making the Kings Hotel, Toronto, his headquarters.

The Diamond Fire Brick Co., Canon City, Colo., at a recent meeting, voted to increase the capital of the company from \$60,000 to \$150,000, and to improve and enlarge the plant.

W. F. Martin, of Cynthiana, Ind., has sold his interest in the Edwards Brick and Sewer Pipe Co. at Albion, Ills., to his partner, George C. Zeigler, and will soon open a yard at Mt. Carmel.

The Sheridan (Wyoming) Press Brick & Tile Company has completed plans for an addition to its plant which will double the capacity. New buildings will be erected, and machinery installed ready for operation in the spring. Building in the city has been hindered on account of shortage of brick.

The Western Clay Products Co., Salt Lake City, Utah, has filed articles of incorporation with \$25,000 capital stock. The officers are: George Curley, president; Andrew A. Cahorn, vice-president; Wm. S. Remmey, treasurer; Alice Curley, secretary, and the above and John P. Cahoon and John A. Spiker are the directors.

THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln my bureau of valuable practical information is **FREE**

ANTON VOGT, Ada, Okla., U. S. A.

The Whitehall (Ills.) Sewer Pipe & Stoneware Co. is figuring on the furnishing of light to Winchester, the same as it does to Greenfield.

The Mohawk Valley Brick & Supply Co., Utica, N. Y., will increase its capital stock from \$15,000 to \$25,000, and the number of directors from three to five.

The Aberdeen (S. Dak.) Brick Co. will be reorganized. A committee has been appointed for that purpose consisting of C. N. Harris, C. F. Easton and S. C. Hedger.

The Fort Pierre (S. Dak.) Brick Co. started their plant the 9th inst., making 50,000 brick daily from gumbo. The plant is an up to date one in every particular.

The Shawnee (O.) Flash Brick Co. has suspended operation on its plant for the winter and it is expected the Iron Clay plant on Rock Run will close down in a few days.

The Billings (Mont.) Pressed Brick & Tile Co. will soon start their plant in operation, the machinery all having been installed. Frank H. Church is president of the company.

The General Ceramic Mfg. Co., South Berwick, N. J., has been incorporated with \$25,000 capital stock to make brick, etc. William Thompson is president and treasurer.

The Coffeyville (Kan.) Vitriified Brick Co. announced that during December its five plants will be run on half time and the men will be cut 10 per cent in wages. The company runs day and night forces three days a week.

Charles Wilson, of Mason City, Ia., has been engaged as manager of the Sheffield (Ia.) Brick & Tile Co., and has assumed his duties. The company will put in an electric lighting plant for the works and to sell electric juice to the town.

C. J. Franklin has resigned his position as manager of the Boise (Idaho) Vitriified Brick Works, and will devote his time to civil engineering.

The Cook Brick & Tile Co., Ithaca, N. Y., has been incorporated with \$20,000 capital stock. Incorporators are: George W. Cook, Charles H. Chapman and Loren J. Cook.

The Ashton Fire Brick & Tile Co. has sold its works to the Western Clay Products Co., Salt Lake City, Utah, for the consideration of \$45,000. The plant is at Third West and Eight South streets.

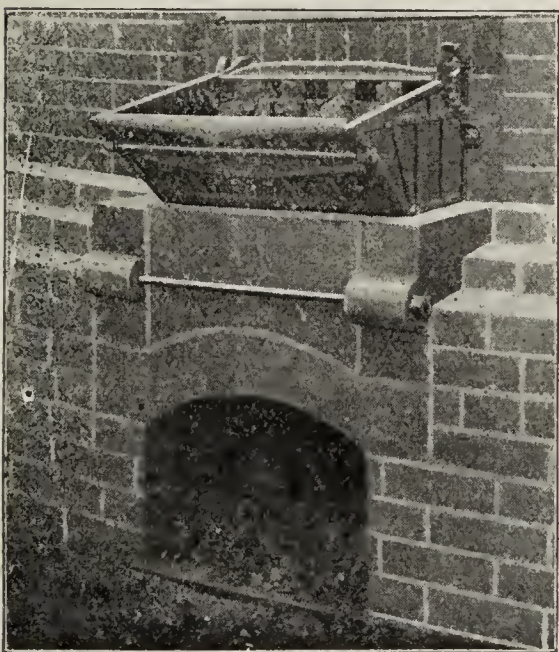
During the month of November articles of incorporation were filed at Dover, Del., for the American Brick and Cement Co., American Koalin Co., and the Wilkesbarre Cement Brick Co. All capitalized at \$100,000 or over.

The Mount Olive (Ills.) Brick & Tile Co. has been incorporated with \$8,000 capital stock to manufacture brick and tile. Incorporators are: C. Weidler, T. H. Koch and C. Clavin. They will enlarge and operate the Weidler plant.

D. C. Richardson-Taylor Lumber Co., Shreveport, La., will establish at Mooringsport a plant for the manufacture of face brick, daily capacity 50,000. Gas from their own wells will be used to burn them. R. H. West is in charge of the construction.

The West Coast Portland Cement Co., Lewistown, Idaho, has started a force of workmen on the Upper Snake river to make the necessary excavations for the installation of a cement plant of 100-barrel daily capacity. Machinery is arriving and will be installed ready for spring. J. M. Edwards is the manager of the company.

**The GILLETT DOORLESS
Hot Air FIREBOX For
Blast Kilns**
Patent No. 792,769



Something altogether new in the firebox line. Burns all the gases and smoke, easy to fire, easy to set up. Will take 20 to 25 per cent less coal than other fireboxes, and will distribute the heat more evenly, and will burn the bottom of kilns about as well as the top. These fireboxes are as cheap as any common box, and will last twice as long as any

other firebox on the market. Write for descriptive catalog and find out what we claim and will guarantee for them.

Would like to sell an interest in these fireboxes to some young man that would like to go on the road to sell same. Good money in the proposition.

A. GILLETT & CO.,
Factory, St. Louis, Mo. **ALEDO, ILL.**

**DIRECT HEAT
DRYERS**

— FOR —
**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. **NEW YORK CITY**

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write
Brick and Tile Machinery
Secor, Ill.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.
American Enameled Brick & Tile Co.
1 Madison Ave. New York

NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$24000, of 240 shares, at \$100 each at par. To equip a complete brick making plant on field of 60 acres, proved at 40 feet and analyzed by the Henry Martin Brick Machine Mfg. Co., of Pa., U. S. A., whose tests are satisfactory for a good sound brick.

The situation of the field is close to the Railway Siding of Claysmore, on the C. N. R., 6 miles from Vermilion City. The Bull's-eye of the famous Saskatchewan Valley, and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field, on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER EASON
Pioneer Builder and Contractor
Vermilion, Alta.

Solicitor
K. V. Fieldhouse, Esq., L. T. B.,
Vermilion, Alta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.
GREAT EASTERN CLAY CO.
39 Cortland St., New York

BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant, local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the
BUSINESS MEN'S ASSOCIATION
Jacksonville, Illinois

POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building tile gas retorts and settings. Understand making magnesite and silica brick; want position as superintendent.
W. T. J., care Clay Record,
Chicago, Ill.

POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.
TRAVELER, care Clay Record,
Chicago, Ill.

FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address
C. SOLFISBURG SONS
Aurora, Illinois

WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAPGOODS,
305 Broadway, New York City, or
1010 Hartford Bldg., Chicago, Ills.

BRICK YARD FOR SALE

Old established yard in good town of 5,5000 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address
CHARLES MCNEAL
Maryville, Mo.

FOR SALE.

Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address
ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:
4. J. CARE OF CLAY RECORD
Chicago, Illinois

PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Sbft mud and stiff mud machinery, engine, boilers and sheds for 8 0000 brick daily. Two Clamp kilns and Stewart kilns. Plant runs steady and can't supply the demand at good prices.

Write to J. WYNN
Weldon, Iowa

WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally pavers.

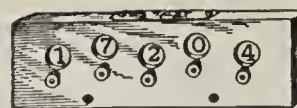
Must have A1 references, no other need apply. Address or reply in person.
EDWARDS BRICK CO.,
Columbia, Mo.

PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address
DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.
THE FERNHOLTZ BRICK MACHY. CO.,
Old Manchester Road
St. Louis, Mo.



Paper Joggers quoted.
R. A. HART, 41 White St.

No better made, cut from
\$8 and \$10, to
4 Wheel, \$3.00
5 Wheel, \$3.25
Guaranteed.
Sold by all dealers.
BATTLE CREEK, MICH.

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT,
Care Clay Record, Chicago, Ill.

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.
Box 81.
Independence, Iowa

PALLETS FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address,
MARTIN
Box 587 Lancaster, Pa.

POSITION WANTED

Position as Superintendent or Manger of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. A-references. Eastern plant preferred. Address
"PAVER" Care of CLAY RECORD
Chicago, Illinois

FOR SALE

A 9-foot American Clay Machinery Co., Dry Pan in first-class condition. Will sell cheap to avoid moving.
SMITH BRICK COMPANY,
Omaha, Neb.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.
709 Chamber of Commerce,
Astoria, Oregon

BRICK YARD FOR SALE

Owing to death of owner, estate will dispose of only brick yards in railway town of 6,000 in Central Illinois. Thirteen acres inexhaustible clay and water supply. Just outside of corporate limits, on main road and adjoining Railroad yards. Will sell cheap.

Address G. E. B., care Clay Record,
Chicago, Ill.

SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer piper. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.
Des Moines, Iowa.



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CHICAGO, DECEMBER 30, 1907.

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Single Copies, - 10 Cents

REPORT OF THE COMMITTEE ON TECHNICAL SCHOOLS AT MEETING OF CANADIAN CLAY PRODUCTS MANUFACTURERS

By W. McCREDIE AND S. J. FOX.

"Some three years ago, at Waterloo, the question of technical education was brought up at our convention. The convention seemed to be interested in the question and expressed that interest by appointing a committee. And, fortunately or unfortunately, I was made chairman of that committee. We have been pursuing our duties as best we know how from that time to the present. This is a very important question as any one who has attended these conventions from time to time since then will know. The present convention seems more particularly to demonstrate the fact that we want more technical knowledge. This is a serious question, also because of the fact that it is a huge problem to introduce and bring into effect any proposed change of this kind. While your Committee has not succeeded as it would have wished to do, yet we are not in any manner discouraged with our work. We think we have made some progress. We think we have been enabled to get things in shape for ultimate success. And, perhaps, it would be as well for me to give a very brief synopsis of what we have done. I think we have reported progress at each convention from the time of our appointment until now. But since our last convention, I think we have made some material progress. Last year, at the convention, when we reported, we had not very much to report. But, meeting in the city of Toronto, at the seat of the local government, we were in a position to bring the matter more prominently before the provincial authorities. We used our best endeavors to bring the matter before the department to which it belongs; and I may say that we have met with very much encouragement as I shall endeavor to show you directly. At our convention in Toronto we had at our banquet—that memorable occasion—Hon. Mr. St. John, shortly afterwards deceased, and Hon. Dr. Pyne, the Minister of Education. On that occasion we did not lose sight of your wishes in regard to this matter, but tried to draw attention of these

gentlemen to the subject, and I think we did succeed in interesting them in the matter. Hon. Dr. Pyne, at that meeting, told us that if we would appoint a committee to confer with them they would try to help us. The result was that a committee was appointed to go to Columbus, Ohio, and there make an examination of the technical school presided over by Professor Orton, whom we all held in honor and who was with us last year. The committee named to undertake that work consisted of Professor Ellis, representing the Board of Governors of the University and the School of Practical Science, Mr. S. J. Fox to represent the government, while I had the honor of being named as the party to represent you. We went to Columbus, Ohio, and made a thorough examination of the plans there in use and the courses they were teaching. And I think I can safely say that we did very much interest Professor Ellis—which was our great object, as he was the representative of the University. I think we have him as a firm believer in the necessity of the course, and I think we can rely upon him to help us in the future in any way he can. We made our report as a Committee. It is not necessary nor would it really be in place that I should give you that report; it was for the use of the government and the Board of Governors of Toronto University. There is a problem connected with it which, no doubt, has occurred to you at once. When it is shown and admitted that this course is a necessary one and one that will help and benefit all the clay-working industries not only in this province but throughout the Dominion, the problem that faces us is the problem of ways and means. And, while we are all rich at home, I suppose, still we do not feel like establishing a fund for a great enterprise like this under our association. In order to carry on such a work it is absolutely necessary to have a good deal of means, means to bring the matter before the proper authorities, means to get the thing going, and then after all, means to provide and install the necessary equipment. Mr. Fox will follow me and will make up anything that my statement lacks. I speak from memory, and, I fear, not with such close connection with the ideas as to make sure of having everything in its place. As I have said, the great problem now is to get the means to start. I

think we have fully converted the faculty of the University of Toronto and the Board of Governors. Am I not correct in that, Mr. Fox?

MR. FOX.—I think that is quite correct.

MR. MCCREDIE. If we have not done anything more than that, we have done quite a work. We are taking means whereby we can bring this matter more prominently before the public and the proper authorities, and we want your help and co-operation. We may ask your financial aid. We have not a cent in the treasury of our Association beyond what is really necessary. In fact, in our meeting here some of the men who represent firms, very cheerfully agreed to subscribe towards a fund to carry on this work. Of course, this is hardly fair. It is not for Mr. Fox, or Mr. McCannel, or Mr. Millar, or myself, to put our hands in our pockets to help run an institution of this kind. Yet, these gentlemen are willing to do it. I think you can safely say that you have a committee that are determined to make this thing a success, and they are doing it from a sense of loyalty to the country and to the profession to which we belong. May I say "profession of brick-making?" (Hear, hear). I guess that is right. In order to further the object we have in view we have drawn up a resolution. I am very glad that we have as our secretary the publisher of a paper who will, in the future, I have no doubt, be of great help to us in this work. We drew him up to the scratch just before going to dinner, hold him our cares and troubles, put the harness on him and intimated to him that we were going to put him to work. He did not kick, and I think he will help us very materially. Now, I am going to ask you to agree to this resolution of which I have spoken. You will understand that, before the means necessary to this enterprise can be raised, there has got to be a lot of lobbying and presenting of our claims and that sort of thing—you can understand that better than I can explain it to you. I am introducing this resolution in order to secure your help. From this you will see how we are progressing:

OTTAWA, Nov. 21, 1907.

Resolution Concerning the Urgent Necessity of Technical Investigation and Teaching in the Fields of Non-Metallic Minerals.

WHEREAS—The non-metallic mineral resources of the Dominion, though vast, are at present but in a crude state of development.

WHEREAS—Any development made so far has been considerably retarded by the lack of investigation of the possibilities of such minerals and by the absence of technical knowledge necessary to their progressive manufacture.

WHEREAS—The development of the clays, shales, and marls of the Dominion of Canada is of greater importance than that of any other minerals, because of their intimate association with Canadian domestic and social needs.

WHEREAS—The establishment of individual enterprises for the utilization of these mineral deposits will result from such investigative technical effort and in the opening up of many avenues for the employment of home labor.

WHEREAS—The manufacture of such products from Canadian minerals will diminish the quantity of imported products into the Dominion.

WHEREAS—Owing to the growing scarcity and consequent increased cost of lumber, the demand for building materials made from non-metallic minerals has been largely increased.

WHEREAS—The means of supplying this demand is limited by the restricted facilities for the manufacture of such products, largely due to the sparse technical knowledge of these resources.

WHEREAS—In consequence of this lack, foreign importations of such products must necessarily largely increase to supply this demand.

WHEREAS—The Dominion of Canada possesses within its bounds all the materials necessary to meet the demands of the home market, if such technical assistance is furnished to the workers.

WHEREAS—Such technical investigation will result in the establishment of enterprises for the manufacture of building brick, face brick, paving brick and block, hollow block, fire-proofing, conduits, drain tile, sewerpipes, roofing tile, enameled brick, mosaic tile, floor tile, fire brick, retorts and kindred refractory products, pottery, art and electric porcelains, faience and decorative tiles, glass and glass wares, cements and kindred products, limes and plaster of paris, (all of which products are in growing demand),

THEREFORE BE IT RESOLVED, That the Canadian Clay Products Manufacturers in convention assembled at Ottawa, urge upon the Dominion and Provincial Governments the immediate necessity of an appropriation of sufficient magnitude for the successful establishment of a technical department and school by means of which technical investigations may be made along the lines outlined above and the knowledge thus obtained imparted to the workers in these respective fields.

Now, I have very much pleasure in moving the adoption of this resolution which, I understand, will be seconded and spoken to by Mr. Fox.

Before I resume by seat there is one matter which occurred to me while I was reading the resolution and which I would like to mention. I knew we had felspar somewhere in the surrounding country, and I had learned that we had kalion somewhere in the west. I was agreeably surprised last night at the banquet to hear one of the speakers make the statement that felspar was to be had right here at Ottawa. These two things, felspar and kalion are the materials that go to make the body of these finer wares. It does seem a pity that, when we have the brains, the hands and the material to make these wares we should lack the "know how" to do it. But we have not any one to teach us. When we were on our trip over to Columbus, we took Professor Ellis to the encaustic tile works at Zanesville. And yesterday as some of us went about the Parliament Buildings here I have no doubt that we were walking on some of this material imported from Zanesville. In these works they employ 700 hands. Would it not be grand if we could have at Ottawa or Toronto such an institution. Since coming to this convention I have been told by Mr. DeJoannis and some of the other men from the other side, that they have nearly doubled the workmen in that institution since last spring. This is a great illustration of what can be done and so I

urge your co-operation and help so that we can help to develop our Canadian industries in this direction.

Mr. Fox. After the able speech you have heard from Mr. McCredie, it is not necessary for me to speak at great length. He has outlined the courses that has been followed, and I am glad to be able to say that we have made some progress. Last year, at the banquet, I think we did convert Hon. Dr. Pyne to the necessity of having something done in this way. We so completely satisfied him that the government of which he is a member were ready to pay the expense of three of us on this trip of which Mr. McCredie has spoken. I can assure you that we all enjoyed the trip—not from the fact that our expenses were paid but from the knowledge we gained. Mr. McCredie has spoken about felspar. You do not have to go far from Ottawa to find that bed of felspar the best on the North American continent. It is in the township of Bedford, in the county of Frontenac, just back of Kingston. From that bed they are shipping felspar as far as St. Louis. It is an old saying that you must go from home to learn news. Professor Orton told us that this felspar is shipped from Canada to St. Louis, where it is ground and distributed. And in Toronto we find this same material in manufactured form brought back by the carload and distributed to the Canadian trade. This should not be so, because there is a large amount of freight being paid in carrying it out and bringing it back—to say nothing about the duties. As to kalion, I would like to give one of my experiences. I think it was about the year 1900 I was coming from Toronto one Friday night. On the same car was a man who had come down from Moose Jaw. He had a sample of clay which he said he wanted me to test. He had it in his grip and he went and got it and showed it to me. As soon as I got my hands on it, I said, "I think this is kalion." Some years before, my brother had been in Florida and from there he had brought back some specimens of kalion. If we have these materials in our country why should we not use them? We do not want the government money for ourselves; we want the money so that we may have schools in which the rising generation will be taught the knowledge which is necessary for the best work and be enabled to put that knowledge into their manufactured products. Our progress seems to be slow, but I think the time will come when we shall have that school. And it may not be so far in the future as we are now apt to think. We must continue to put forth our best efforts. I was not at the banquet, unfortunately, but I have heard some of the rumors of what was said there. I heard, for instance, that Mr. May, the member of the local legislature for Ottawa was converted to the belief that there should be a technical school established. Every man that we convert to that idea is going to be of assistance to our cause. When you go home, and as you move about in different parts of the Dominion talk with the local and Dominion members and talk about this cause if you have faith in it—and if you haven't don't talk. When we were on the trip of which Mr. McCredie has spoken, and after we had spent two days in going through the Ceramic School, under Professor Orton, who gave us all the information we required, I said to Professor Ellis, "Now, you have seen the theoretical part, but what I would like you to see is the practical part—I would

like you to see the goods actually being made." I asked Professor Orton if there were any good works in the vicinity. So he gave us letters of introduction to five or six different firms, brick, encaustic tile, art pottery, chinaware and stoneware. We went to these places, and after going through the whole of them, on our return trip I said to Professor Ellis, "Well, how did you like the trip?" He said, "I would not have missed the last part of it for anything." He was overjoyed to think that he had the privilege of going over these institutions and seeing how the work was done. When he returned he joined in sending in the report to the government. That report, of course, is government property and is for the government's information. He also reported on his own behalf to the faculty of the university, and the professors approved of the course after looking into it. Then it was handed to the board of trustees and they also approved it. Then it passed on to the higher body of the university, the governors, and Professor Coleman told me when I met him some time later that it had taken him and Professor Ellis about half an hour to explain just what the ceramic course was. But when they got the information required, they also approved of the course. But the question with them was, Where is the money to come from? They said: We are already taxed to the utmost to furnish room for the existing courses. You all know the new building of the School of Practical Science in Toronto. When it was laid out it was estimated that for fifteen or twenty years they would not have to add to it. But the building was not completed before it was crowded with students. And now, inside of five years from that time they want another building as big as the one they have in order to accommodate the students who wish to attend. At the last meeting of the Legislature, the Government empowered them to borrow \$2,000,000. Practically this meant that the province guaranteed the repayment of the money, the board of governors being empowered to borrow it, and the university today is not under government control but under the control of the board of governors—it used to be more under the control of the Minister of Education and the Legislature. When Professor Coleman told me about the difficulty I said, "But the Legislature has empowered you to borrow \$2,000,000. Can't you use some of that?" "Oh," he said, "the courses already laid out will take up every dollar of it." Later on I spoke to the Minister of Education about this point and he said, "Let them spend the money they have got, and then if they can show good cause why they require more we will assist them." But this may mean four or five years' waiting. We do not want to wait too long, but would like to see this thing in operation. For that reason I have the greatest pleasure in seconding this resolution. It is not necessary for me to say anything in advocacy of it, for I think you all agree with the idea. What we are here for is to better our conditions, to have a knowledge of our own business, so that we may advance just as fast as the other trades and professions of the country are advancing. I do not think that we should lag behind, merely waiting for something to turn up, but should keep up with the march of the times and advance with the advancement of the whole country.

Resolution carried unanimously.

LIME AND ITS PREPARATION FOR SAND-LIME BRICK MANUFACTURE *

By S. V. PEPPEL.

Lime and its proper preparation for use in the manufacture of sand-lime brick constitute probably the most important factor in the economical production of a satisfactory building material from sand and lime. Almost any reasonably clean sand will with a good and properly prepared lime make a good brick, but not matter how good the sand, if the lime hydrate is not right you cannot have a satisfactory brick. Therefore it is very important to the manufacturer of sand brick that he not only procure the lime which has the most desirable chemical composition, but also it is very advantageous to get one which has been burned under such conditions as to make it the most sensitive to slaking, and from such sources, as near as possible, as will permit the receipt of frequent and small shipments, since a very sensitive lime will be at the same time more susceptible to air-slaking during transportation and storage, which, of course, does no damage to the brick, but reduces the efficiency of the lime in the sand-lime brick reaction in the hardening cylinder.

Limestones completely calcined at temperatures not in excess of 1,000 degrees, C. produce limes which are the most readily and completely slaked and yield a larger volume of hydrate than limes made at higher temperatures. The plasticity and bonding power of such limes is also greater than those burned at higher temperatures. High temperatures in the burning of lime make a product which is slow in slaking, with a tendency to the incompleteness of the reaction.

To the best of our knowledge there is no other industry in which the proper manufacture of lime and its subsequent preparation are so important a factor, unless it is in the sugar industry, which in the main has come to the burning of its own lime, not because they can save money but in order to get the best possible product, regardless of expense.

Observations made by the writer within the last year using a carefully standardized Fery pyrometer on five or six plants which stand for average conditions on production, indicate that most of the lime put on the market is overburned, because with the exception of one plant the temperatures used were all the way from 1,100 to 1,400 degrees C. These high temperatures are maintained in order to get greater capacity from the kilns.

At the present time anything is considered as lime that will make an appearance of slaking and give some sort of a bond in mortar. The time will come, however, when the man who makes a sensitive lime and delivers it while fresh will have the trade, and eventually there will be established standard tests and requirements on which purchases of lime will be made, just the same as is the case for many of the raw materials for use in other industries.

Sand brick manufacturers should either burn their own lime or else contract for it under definite specifications as to its condition and composition on its arrival at the plant, because when the lime is just right 7 per cent will often do the work of 10 per cent of an imperfectly burned lime or one that has been badly air-slaked or overburned. A lime with a small amount of core is more desirable for

your purposes and will go further than one that is overburned or air-slaked badly.

When certain constants for a given lime are once established much may be learned about the comparative quality of the lime from car to car by very crude tests and inexpensive apparatus, which can be operated by anyone of ordinary intelligence when properly instructed.

If a definite quantity of pure calcium oxide which has not been overburned be agitated in a definite amount of water at any given temperature, the slaking will in a definite period of time reach a maximum temperature. The amount of the increase of temperature will depend on the composition of the lime as well as on the amount of air-slaking which has taken place. The maximum temperature which can be obtained decreases with the increase of the percentage of magnesia as well as with the increase in the amount of air-slaked lime present; therefore it would be necessary to establish constants which represented the maximum heat generated for the various types of lime or for the one in use at any particular plant. The time period required to reach the maximum temperatures under standard conditions would be a guide to the burning conditions. If overburned, the slaking will be slower and more time will be required to reach a maximum temperature, and when working in a crude way with no allowances for radiation the maximum temperature will be less, due to greater losses by radiation by the extension of the time in which the hydration can be fully completed.

If testing stations or laboratories were available, the specific gravity, loss on ignition at high heats and the total impurities might be used as guides in the selection of the limes and in the control of shipments.

I am fully satisfied that the members of this association could advisedly spend considerable time, money and energy on this matter and establish a few standard requirements, and develop some simple apparatus for use at each plant so as to test each car of lime received, if you do not care to go so far as to equip yourselves sufficiently to be able to determine which of a number of limes, available at about the same cost, would be the most economical to use. The laboratories are always available for the latter, so that it is not so important as some means of control after the laboratory has shown which lime is the best and the maximum constants for that lime that can be obtained by crude tests at the plant on each car received, and done at almost no additional expense. If the lime manufacturer has a few cars condemned and thrown back on his hands and knows you are testing his product before use, he will be more careful in what he sends you.

This matter is most important because, in nearly every instance where desirable sand brick locations are found, limestone is absent, and, again, most sand-brick plants today are not large enough to consume sufficient lime to make it economical to manufacture lime for this purpose alone. A single kiln of modern type produces eight to ten tons daily, and for an economical plant there should be at least four to six kilns.

LIME MANUFACTURE.

Great strides in the way of improvement in lime manufacture have been made in the last few years. This has come about through an awakening of the manufacturers to the fact that they were no farther ahead than they were fifty years ago and had just followed in the footsteps of their fathers. So when it became necessary for many plants to change from wood as fuel to coal they were all at sea as to how to do it and had no idea but what a kiln that was a success with wood would do as well with coal. But they soon found out that such was not the case, and blamed it all on the coal, and said that good lime could not be made with coal. There were those, however, who persisted in their efforts and soon found that by modifying the kiln lines, the

* Read at the convention of the National Sand-Lime Brick Manufacturers, at Columbus, O.

furnace dimensions and draft conditions a good lime could be produced with coal as fuel and at a reasonable cost.

About this time the National Lime Manufacturers' Association was formed, and, through its medium, a mutual exchange of experience and ideas was brought about, aiding materially in the production of individual investigation and experiment, which has been very productive, since all new plants are being put up along modern lines. Instead of making extensive repairs on old and inefficient plants, new ones are being put up and the old ones abandoned. There has also been a strong tendency to centralization of manufacture at the most economical points of distribution, where the best product of each type of lime could be produced economically.

Another evidence of progression in the industry is the fact that today many of the manufacturers have so improved their methods of accounting that they can tell you the cost at almost any point in the operation, while ten years ago the average manufacturer could hardly tell you whether he was in debt or not, and sometimes was very uncertain about that. What it cost him to make lime and deliver it he guessed at, and sold it at any price that he heard that his neighbor manufacturer was asking for it, or at a little less. But association and organization have materially changed all this, and the lime manufacturers of today bid fair to be a progressive and aggressive lot of fellows in the future. They are, however, only just beginning to realize that the application of the same technical methods which have introduced so many economies in other industries will be of benefit to them and save them money. As a result of this, at some plants the fuel cost has been cut completely in two with no additional labor cost. The fuel cost today varies widely at different plants of approximately the same size. Sometimes it is the kind of fuel used; again it is the location of the plant, and in other cases it is the construction and operation of the plant. Small plants almost invariably have higher costs for both labor and fuel. Especially is this the case on the labor end of the cost of production. The total cost of production ready to load on the cars in Ohio is approximately as follows for bulk lime, and probably represents a fair average for the Central West:

	Cents per barrel.
Fuel	7.45
Labor for all purposes.....	13.70
Fixed charges.....	4.00

This would make the lime cost the manufacturer, without the cost of labor for loading and interest on investment and selling expenses, about \$2.50 per ton in bulk. When shipped in barrels the cost will be from \$2.10 to \$2.50 additional to the lime manufacturer. The fuel cost given above is the total fuel for the quarry, and the plant as well as for the burning of the lime. Very large and well managed plants do better than this, and all small plants (say, two or three-kiln plants) seldom reach this efficiency.

High fuel costs are often due to excessive radiation caused by faulty construction of kilns; i. e., thin walls on kiln, and especially on furnaces. In other cases it is caused by the excessive use of cold air. In one case, which came under the writer's observation, by a reduction of the air excess the same capacity was maintained with approximately 50 per cent of the fuel formerly used.

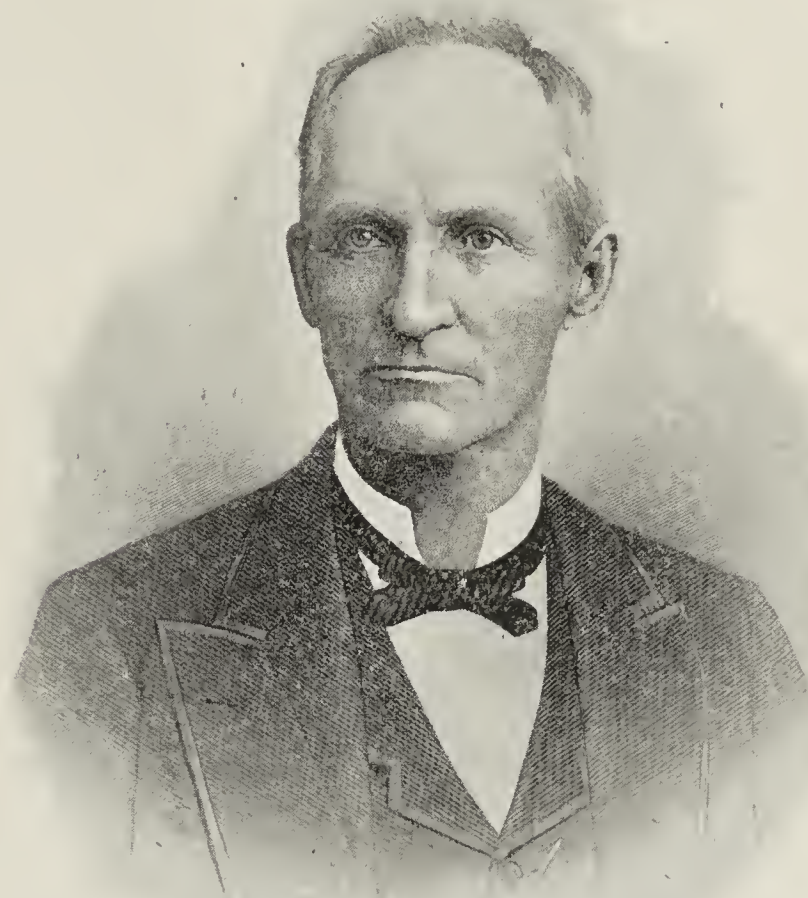
The sand-lime brick manufacturer should purchase, whenever it is possible to procure it, a lime that has less than 2.5 per cent of total impurities. He should also, whenever it can be had at a reasonable price, use a lime that has not less than 94 per cent calcium oxide, and the nearer 100 per cent calcium oxide it is the better will it be. He should also have a lime that has been very recently burned, but it should be one day old before slaking, since hot lime right from the kiln does not slake so freely and completely as lime that has cooled for twelve hours or more.

FRANK ALSIP

Frank Alsip, one of the best-known brick manufacturers in the United States, inventor of numerous improved brick-making devices, an argonaut in the California gold fields in '49, and a wealthy and prominent resident of Chicago for years, died at his home, 445 Ashland boulevard, at 8:30 o'clock Friday, December 20th.

The immediate cause of death was cirrhosis of the arteries. Last January Mr. Alsip was afflicted with a severe attack of rheumatism, resulting in a weakening of his constitution, from which he never fully recovered. A marked change for the worse was noted in his condition a few weeks ago, and from that time he failed rapidly.

Mr. Alsip was born in Pittsburg, Nov. 17, 1827. He began work at the age of 12 years in a brickyard in Pittsburg. In 1849 he crossed the plains and became a prospector for gold in California. He returned in 1852 and removed to Prairie du Chien, Wis., in 1857.



FRANK ALSIP

After the Chicago fire he engaged in the brick manufacturing business in this city as a member of the firm of Hayt & Alsip. In 1885 he established, with his son, the firm of F. & W. H. Alsip, which was incorporated in 1887 as the Alsip Brick Company, of which he was president. He established brick manufacturing plants throughout the city which had a total capacity of 100,000,000 brick per annum.

He fought the battles of life with only a primary school education, was a good man, worked hard, and paid his debts. His children loved him and his friends respected him.

He is survived by Major Frank B. Alsip, formerly of the First Illinois Cavalry, and a veteran of the Spanish-American war; Captain Charles H. Alsip, now of the First Cavalry; Mrs. W. B. Weigel, and Mrs. George R. Linn, all of Chicago. His wife and two other children, W. H. Alsip and Mrs. W. E. King, died some years ago.

FUEL FOR STEAM RAISING

Coal used for steam-making purposes should be of such a grade as to take fire easily and burn rapidly with a steady flame. In order to kindle readily, it is necessary that the fuel shall contain a certain amount of volatile matter. Another point to be desired in a steam coal is a low percentage of ash, as this will reduce the expense of handling refuse. Sulphur should not be present in any great proportion, as it aids clinkering and corrodes the boiler surfaces.

To conform to such requirements as these the choice of good steam coals narrows down to anthracite, semi-anthracite and semi-bituminous—that is, to those coals in which there are from 75 to 90 per cent of fixed carbon, and from 25 to 10 per cent of volatile matter in samples dry and free from ash. Of the three grades mentioned, the semi-anthracite and semi-bituminous are to be preferred to the anthracite, since they ignite more readily and burn more freely.

When a charge of coal high in volatile constituents is fed into a furnace there is a sudden formation of a large volume of combustible gases, due to the heating of the charge. To have perfect combustion a correspondingly large volume of air must be admitted at the same time to unite with the hydrocarbons. If sufficient air is not supplied there will be a loss due to the escape of unburned combustible. On the other hand, if the supply of air is continued beyond the time when the volatile matter is driven off and burned, there will be loss due to the excess of air over and above that required to furnish oxygen for the combustion of the fixed carbon. It is an exceedingly difficult matter to vary the air supply according to the instant demands for oxygen in the furnace, so it is customary to furnish a regular supply about twice as great as that theoretically needed to give perfect combustion of the fuel.

A fuel that is high in volatile matter, as, for example, a bituminous coal from the Western fields, burns with a long smoky flame. If, as is commonly the case, these flames strike against comparatively cold tubes or plates before combustion is complete, the gases are chilled, combustion is checked, and soot is deposited on the boiler surfaces and in the fire tubes. The escape of unburned gases is, of course, a direct loss.

It has been found that the highest evaporative results per pound of fuel have been obtained by the use of semi-bituminous coal. Such coal kindles easily, burns without smoke, has a short flame, and may therefore be used in firebox, return tubular, or water-tube boilers with little loss due to chilled gases. As a rule, it contains small percentages of ash, moisture and sulphur.

The selection of a grade of coal to be used for steam generation will involve the careful consideration of several factors that affect the result. Of course, the ultimate aim is to obtain as great a number of available heat units as possible at the lowest cost for fuel and working combined. Thus, a cheap fuel may cause so much trouble to the fireman as to prove more costly in use than a more expensive fuel.

In selecting a fuel, it is necessary to know the following:

The cost per ton of the several kinds of fuel that are available; the heat value per pound of each of the fuels; the percentage of the heat value per pound which may be considered as available for heating purposes in the boiler; the highest rate of evaporation of the boiler or boilers with different fuels; the cost of handling the different fuels, as well as the cost of handling their refuse; and the freedom from smoke production of the several kinds when burned in the furnaces considered.

The heat value of coal per pound is not alone a safe guide in the selection of a boiler fuel, for the reason that the boiler setting or the grates may not be at all adapted to the economical use of certain grades. Thus, if bituminous coal is to be burned, the furnace must be arranged for a gaseous, long-flaming coal, whereas with anthracite the flame is very short, and the fire may be kept in closer proximity to the tubes or shell of the boiler without danger of cooling the hot gases too quickly and thus producing smoke.

RELATIVE VALUES OF DIFFERENT COALS.

COAL	Semi-bituminous Coal—100	
	Combustible	Coal
Anthracite	93	89
Semi-Anthracite	94	91
Semi-Bituminous	100	100
Bituminous (East U. S. A.)	95	95
Bituminous (West U. S. A.)	90	77
Lignite	77	56

The same boiler, with different fuels, will give different evaporative efficiencies—that is, the available heat in any given case depends upon both the boiler and the fuel.

If a plant requires a certain output of water, and additional boilers cannot be installed, owing to lack of room or other reasons, then the coal selected will be simply one of having high enough evaporative power, with the given boilers, to furnish sufficient steam to the engines, regardless of whether it is the cheapest or the dearest.

Again, the draught obtainable in a plant may influence the selection of a fuel. If the chimney is designed for certain conditions, it is possible that an attempt to change both the grade and the kind of coal would result in trouble with the draught. Consequently, the maximum draught pressure obtainable with the existing chimney must be known before the wisest selection of a fuel can be made.

The percentage of ash in a coal is an important factor in determining its desirability as a regular fuel. Generally speaking, the cheaper the grade of coal used, the greater the percentage of ash and clinker, and the greater the difficulty in keeping a clean fire. With stationary grates, the use of the slicebar at frequent intervals causes wear and tear on the grates, and results in shaking a larger proportion of the fuel into the ashpit, where it forms a direct loss.

The handling of the ashes also becomes an important item, especially in cities where it is necessary to cart them away or otherwise remove them from the vicinity of the plant. All other things being equal, therefore, the coal that contains the least percentage of ash will be found the most economical.

BRICK-MAKING IN CUBA

Quite a number of new brick-making industries have been started in Cuba since the arrival of the United States troops and the more quiet conditions. Last year many of the works were idle, due to lack of confidence. The writer has been traveling throughout the island of Cuba, and has taken special observation of the flourishing condition of the brick-making yards. There is considerable building in progress in Havana, and other section of the island, resulting in the demand for brick. The Cuban brick-making establishment is quite an institution. Almost everything can be made in open air. It is true that there are heavy rains to interfere with the operations at intervals during the year, but for the most of the time it is clear and pleasant. The works are



A CUBAN BRICK PLANT

more open here than in any country visited by your correspondent. The Japanese have their brick-making plants well sheltered and the kilns are underground. The Chinese enclose and brick up much of their plant; while the brick makers of the Philippines have great mounds to protect certain operations in the process of brick making. In Cuba you can see much of the work in the open.

There are some sheds and a few structures for the protection of the machinery, otherwise most of the work is conducted on the outside.

The workmen are chiefly Cubans. There are Spanish and other foreigners including some Chinese coolies, but the Cuban laborer predominates. His wage rate is low compared with the cost of similar labor in the United States. This is an advantage that the brick manufacturers of the country have. They may have to pay excessive rates of duties and freights on imported machinery and supplies, but they can make up for it in the cheaper labor. It takes a long time to get machinery here from the United States. The brick makers are variously handicapped in this way. But when it comes right down to the labor problem, the native help is useful. There are strikes and there are other difficulties arising, but taking it year after year, the Cuban

manufacturer is not badly off in the respect of labor. The laborers often live on the grounds having their own cook. They can live very cheaply by clubbing in on a mess. Hence the low wages means a great deal to them, whereas the same wage scale would hardly pay for the support of the family of the hard working laborer of the American brick-making plant.

As I traveled about the various brick yards where work was in progress, or where they were putting up new structures and putting in new machinery, I noticed that the American boss prevailed. I would enter a works and look about. In a few minutes a man would approach and in good English give me a welcome. Almost always this English-speaking man was the boss.

These men are experienced brick makers from the United States who have been engaged at liberal wages to undertake the supervision of the installation and manufacturing.

Bricks have been made in Cuba since the beginning of events in the Cuban history. But until the past generation the processes were of the crudest sort. Even up to five years ago, the very crudest patterns of machines were used. I saw many of these ancient devices in service. Nevertheless, the advent of the modern machinery has worked wonders in the improving line. So that in many establishments one may see the improved type of machine operating at high speed along side of the old pattern. Many places in the interior they still use old machinery and devices and there is a great opportunity for the builders of American



CUBAN BRICKLAYERS AT WORK

brickmaking machinery to dispose of modern pattern machines to these works. I find that the users of the machines are not exactly particular about obtaining the very latest designs. In fact, they would rather have the more simple machines. I spoke to several managers who told me that they were afraid to buy the very recent patterns of labor-saving machines just now for fear that said machines would be a little too far advanced for the native help to manage. Hence machinery of some years back is selected, trusting

that it will neither be out of date nor so modern as to be fitted with an excess of labor-saving attachments and complicated to the native's eye.

The engines which they are putting in are very much up to date. The plants for generating the steam power are modern. This part, in many instances, is as near up to date as one could in an American works.

Of course there are all kinds of brick yards. There are some little institutions which are installed in the woods where one or two workmen combine to make enough brick to support a family. They labor with the clay and then they devote a period to making the brick and some other time they burn them. Then they go to the market and peddle



CUBAN BRICK PLANT NEAR TOLEDO, HAVANA, CUBA

the brick and get the cash. One may see wagons of brick being carted about where there are brick layers at work and the carts stop and a bargain is made with the boss and the brick are deposited on the ground near the workmen. The hand-to-mouth system prevails throughout the island.

The brickmakers of Cuba have the advantage of good clays to work with. There are numerous good clay beds, particularly in the vicinity of Havana. I found a number of brick-making plants just outside of the city limits. The clay is often tinged with a whitish substance; there is much lime in the soil. There are reddish properties and the soil is often a red color for miles around so that the rain waters are tainted or colored by it. The lime which prevails in many sections is very strong. There are lime works established near many of the brick works and the two are often worked by the same man.

The brick of this country is usually a dull brown. There is a brick which possesses the color of the brown dust and this shade seems to be popular among the house builders. The brick of Cuba is used for flooring and for the making of mantels. There are but a very few fires in this country due to the extensive use of brick. There are brick of various colors and these are very ingeniously employed in the formation of patterns. Some excellent designs are worked out in walls with the variously colored brick. The brick are dyed in some cases, while in others the tints are obtained by mixing the various kinds of clay. The brick walls of some of the exteriors of houses in Cuba are decorated with regular oil color pictures. It is a strange plan, but attractive and novel to the tourist. The artists often get a fine landscape picture right on the exterior wall of the house.

"R."

THE STEAM BOILER AS APPLIED TO BRICK-YARD PRACTICE

By W. S. STAFFORD, M. E.

A boiler is primarily a steam generator and from its inception has included many types. The two classes most popular, however, are the fire tube or return tubular and the water tube types, the former being more generally used on account of its adaptability to small plants. Although other types have advantages under certain conditions, it is generally considered the standard because of its reliability, economy and the ease with which it is handled. This boiler is manufactured by hundreds of concerns all over the country and there is little, if any, difference in the various makes, except workmanship and quality of material. The sizes are standard and an investigation of the specifications of the different builders, will show that all details, such as size of blow-off, feed, safety valve, gauge cocks, etc., are practically the same.

The construction of this kind of boiler has been greatly improved upon in the last decade, particularly in the riveting. But very few old style lap joint boilers are now made, butt joints being generally specified. The efficiency of this latter joint is much higher, and the first cost of a boiler built in this way, is but very little more than for the old



KILNS OF A CUBAN BRICK PLANT

style lap joint. The difference is so small that the cheaper type should not be considered. The butt, or stronger joint, is used for longitudinal seams and is usually double or triple riveted, even quadruple riveting being sometimes specified. The circumferential seams on this type of boiler are, however, generally single riveted. This class of boiler is, in most cases, built without a dome, experience having proved that it is almost useless and detracts rather than adds to the efficiency of the boiler.

Any insurance company, taking boiler risks will gladly furnish specifications for a modern up-to-date return tubular boiler, with which a working pressure of 125 pounds or even 150 pounds can safely be carried. By all means get this data if you are in the market for a boiler and if it is built exactly in accordance with the specifications, you can be sure of its good qualities. The necessity for a well made boiler will be appreciated when the enormous amount

of stored explosive energy is known. Wm. Kent, in his "Mechanical Engineer's Pocket Book," quotes Prof. R. H. Thurston, in which he says: "A boiler 60 inches in diameter and 15 feet long, has 66 3-inch tubes. It has 850 feet of heating and 30 feet of grate surface; is rated at 60 horsepower, but is more often driven up to 75 horse-power; it weighs 9,500 pounds and contains nearly its own weight in water, but only 21 pounds of steam when under a pressure of 75 pounds per square inch, which is below its safe allowance. It stores 62,000,000 foot pounds of energy, of which but 4 per cent is in the steam, and this is enough to drive the boiler just about one mile into the air, with an initial velocity of nearly 600 feet per second." In view of this fact, is it any wonder that a poorly constructed or run down boiler explodes.

No matter how good a boiler you may have, it will never come up to average efficiency unless properly set and connected. Follow out instructions faithfully in this respect and be sure you have enough grate surface and sufficient room under the boiler for as near perfect combustion as possible. Also see that there is enough draft and air space through furnace and between grates. Air space in grates should be from 30 to 50 per cent of the total area. Boilers are too often crowded, which materially shortens their life. In determining the proper capacity of boiler to use, it is well to remember that you will require steam for other purposes than merely driving the engine. You doubtless have numerous pumps, and perhaps other auxiliary or heating apparatus that will need live steam. A boiler horse-power is the evaporation of 30 pounds of water per hour from a feed water temperature of 100 degrees Fahr. into steam at 70 pounds gauge pressure. This standard was accepted by the American Society of Mechanical Engineers in 1884.

The size of the boiler should depend a great deal upon the steam consumption of the engine and while 30 pounds per horse power per hour is considered sufficient for the average engine, the cheaper grades of prime movers require much more. And don't forget that the average steam pump will take two or three times the steam per horse power per hour as the ordinary engine will consume.

Too much cannot be said of the necessity of keeping a boiler clean and free from scale. A good open feed water heater will do wonders sometimes in this direction and will remove from the feed water the greater portion of the impurities by which scale is formed, such as carbonates of lime, magnesia, etc. Be sure, however, that the heater has ample filtering capacity. This is most important as is also the frequent renewal of whatever material is used for filtering. Of course, there are certain impurities that cannot be precipitated or held in suspension in the heater through the action of the exhaust steam, such as sulphates of lime, etc. These, however, are in the minority and water containing them is usually chemically treated or the remedy applied in the shape of a boiler compound. Remember scale is a poor conductor of heat and will not only injure the heating surfaces by rendering them liable to burn, but will be the direct cause of an increased fuel consumption. In addition to keeping boiler free from scale as possible, the tubes and flues should be frequently cleaned, depending upon the fuel used and nature of the water. If the heating surfaces

are allowed to become covered with a thick coating of soot, it will greatly affect the economical operation of the boiler.

The importance of a good open feed water heater cannot be exaggerated. By utilizing the exhaust steam from the engine or pumps, the feed water can be heated to a temperature of 204 to 210 degrees Fahr. This is worth considering when we find that statistics prove that one per cent in fuel is saved for every ten per cent the water is heated above 70 degrees before being pumped to the boiler. In addition to this the exhaust steam condensed in heating the water is fed to the boiler in a purified state, and as a usual thing is a decided advantage. Another feature of a good heater is that all of the exhaust steam entering the same, is not used in heating the water, but all of it passes over or through oil separators, which in some heaters are merely a series of corrugated baffle plates. The steam not condensed passes from the heater in a purified state in a better condition to be used for many purposes than if it was impregnated with oil. This result can be obtained in most good heaters without causing a back pressure on the engine.

Of water tube boiler there are many types and under some conditions they possess decided advantages over a return tubular boiler. They are undoubtedly safer than the latter type when operating continuously under extremely high pressures; not because of any superiority of material or workmanship, but mainly on account of multiplicity of parts. Its first cost is much more than a tubular or fire flue boiler, and it is doubtful if, under ordinary conditions, it is any more economical or efficient. Economy and efficiency of the various types of boilers depends entirely upon the conditions under which they are working. Whether it be a return tubular or a water tube, if the same working conditions exist and the same care and intelligence exercised in their erection and operation, the result will be substantially the same from a standpoint of economy. This being true the lower first cost of a tubular boiler will no doubt appeal to the average buyer. As stated before, the insurance companies, taking boiler risks, do not hesitate to allow 125 to 150 pounds working pressure on a well made triple butt joint boiler, and a very few engines in ordinary power plants are built for a higher pressure than 125 pounds. The return tubular boiler is more easily cleaned much simpler in construction and its reliability has never been questioned.

Do not construe this article to be an adverse criticism on water tube boilers. As stated before they possess decided advantages under certain conditions, but for use in an average power plant, the higher first cost is not justified by any economical or efficient results. Any type of boiler to be successful, requires intelligent care and close attention to details. Careful firing and a knowledge of the necessary requirements of perfect combustion will go far toward making a success of any good boiler. All connections should be frequently examined and tested. Corrosion of safety valve and steam gauge is very often the cause of serious trouble. The writer remembers a certain engineer in southern Indiana who was usually boasting of the perfection of his plant. One day, however, his boiler exploded and completely wrecked the entire factory. When the steam gauge was found it showed a sixty-pound pressure, but an examination proved that it was set and several hundreds pounds pressure would not have been sufficient to change the indicator. The safety valve was found in a wood shed about three thousand feet away, it having gone through the roof. It also was in frightful condition and required about three thousand pounds pressure to move the valve from its seat.

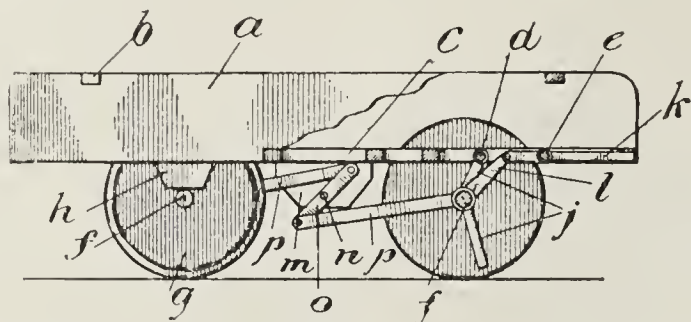
It is not often, however, that such carelessness is shown, but proves that close attention to details, not only by the engineer, but also by the superintendent or proprietor, will prevent catastrophes that may perhaps cause a loss of life.

NEW INVENTIONS THAT ARE OF INTEREST TO THE CLAY MANUFACTURER.

These new inventions are those that are especially of interest to anyone engaged in the line of building materials and their manufacture, or machinery to make them:

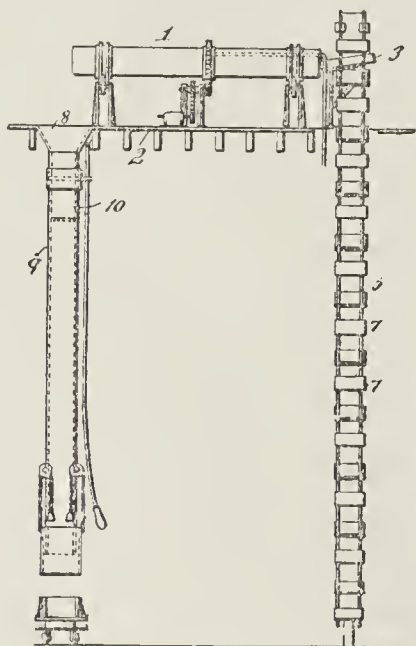
869,353. Brick-Truck. Henry J. Dundas, Leaside Junction, Ontario, Canada. Filed Nov 1, 1906. Serial No. 341,629.

In a brick truck, in combination with the axles and carrying wheels, of a frame adjustably mounted on said axles, connecting links adjustably connecting said frame with said axles, operating levers engaging with said axles and frame, and operating levers engaging with said frame and axles, substantially as described.



In a brick truck, in combination with the carrying axles and wheels, of a frame adjustably mounted on said axles, said frame comprising sides and cross braces, connecting and fulcrum bars set in said frame, connecting links adjustably connecting said axles with said connecting bars, operating levers connecting with said axles and connecting bars, operating levers mounted on said fulcrum bars, said operating levers engaging with crank arms mounted on said axles, a lever bar mounted in said frame, coupling bars connecting said axles with said lever bars, bearing blocks set under edges of said sides of frames, substantially as described.

871,363. Concrete Mixing and Molding Apparatus. Charles R. Schmidt, Baltimore, Md. Filed March 12, 1907. Serial No. 361,914.

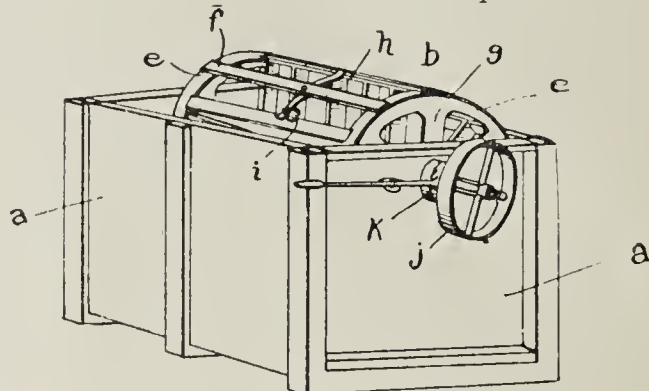


A continuous mixing and molding apparatus, comprising a mixing tank located on an elevated platform, a plurality of endless conveyers arranged and adapted to convey the different ingredients of a concrete mixture, in different proportions to the mixing tank, a chute extending downwardly from the platform and a grid or riddle arranged at the upper end of said chute.

In an apparatus for filling molds, a vertical chute for delivering material to molds from a height, said chute being provided with a measuring chamber, means for regulating the capacity of said chamber, and a vibrating grid or riddle, substantially as described.

870,357. Washing-Machine for Brick-Molds. John W. Goulding, Trenton, N. J. Filed July 5, 1907.

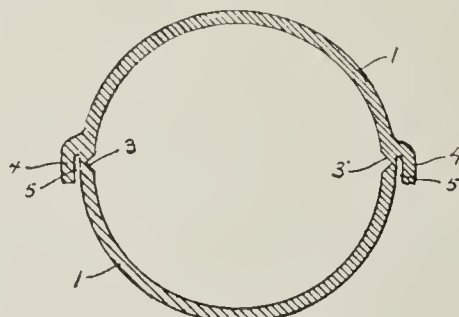
A washing machine for brick molds including a tank, a rotary wheel in said tank composed of opposite heads having radial grooves in their inner faces adapted to receive the molds, and means for engagement with the outer faces of such molds to retain them in position.



A washing machine for brick molds including a tank, a rotary wheel in such tank composed of opposite heads having radial grooves in their inner faces adapted to receive the molds, brace bars connecting said heads and spring devices carried by said brace bars and capable of engagement with such molds to retain them in position.

871,389. Drain-Pipe. Edwin J. Cochran, Sterling, Ill. Filed Sept. 7, 1907. Serial No. 391,829.

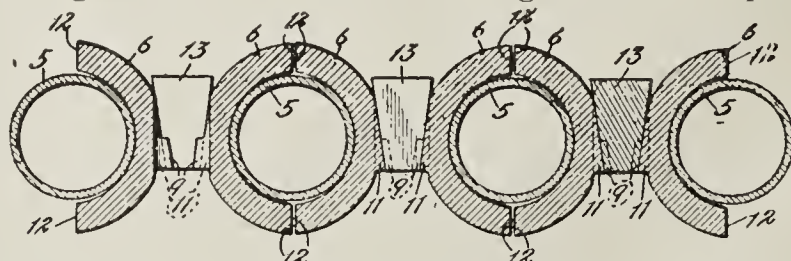
A device of the class named, comprising a plurality of pipe sections, provided at alternate ends with annular rims; a pair of longitudinal grooves on the inner side walls of said sections; and a pair of longitudinal flanges on the outer walls of said sections, spaced apart therefrom, and adjacent to said grooves on the inner walls of the sections, substantially as described.



A drain pipe, comprising a plurality of sections, provided with a pair of longitudinal grooves on the inner side walls thereof; annular flanges on alternate ends of said sections, each of such flanges being separated into two parts along the line of said grooves; and a pair of longitudinal flanges on the outer walls of said sections, adjacent to said grooves, and spaced apart from the wall of the pipe, substantially as shown and described.

871,838. Tile Construction. John F. Warwick, Chicago, Ill. Filed March 16, 1907. Serial No. 362,653.

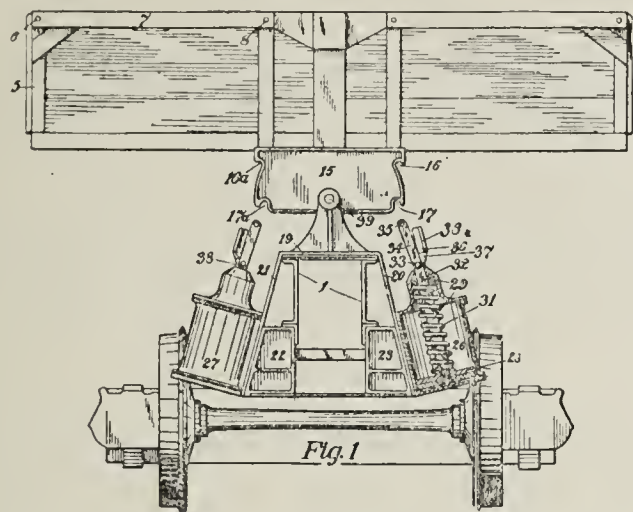
A tile construction comprising pairs of tile having oppositely disposed recesses adapted to form a series of channels, a series of outwardly extending ribs on the sides opposite said recesses forming channels therebetween, and a tapered key fitting within said channel holding said tiles in place.



A tile construction comprising pairs of tile having oppositely disposed semi-cylindrical recesses adapted to form a series of tubular channels, a pair of outwardly extending ribs oppositely disposed to said recess, forming with the ribs on the adjacent tile a channel at right angles to said tubular channel, and a key adapted to fit within said channel and to lock said tiles securely in place.

872,057. Dump-Car. Charles H. Doty, Columbus, Ohio, assignor to The Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio, a Corporation of Ohio. Filed Mar. 11, 1907. Serial No. 361,784.

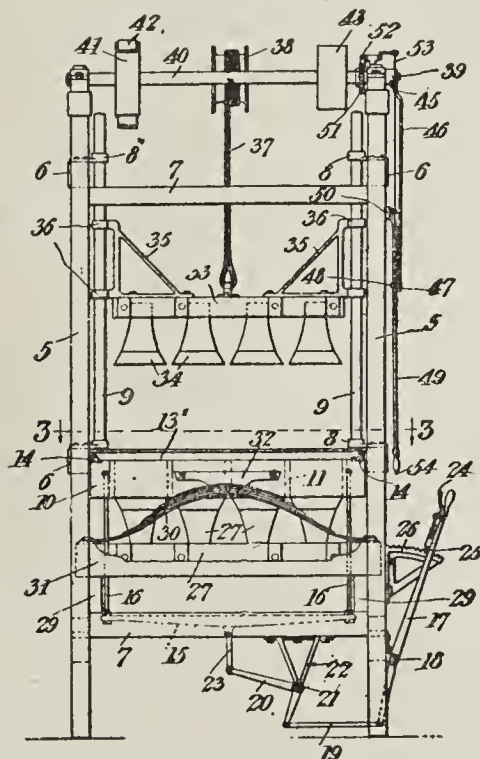
In a dump car a car body mounted upon a central pivot to swing vertically, fluid operated means arranged on one side of said pivot adapted to be moved into engagement with said car body to dump the same, and other fluid operated means arranged on the opposite side of said pivot adapted to be moved into engagement with said car body to right the same.



In a dump car, a car body mounted upon a central pivot to swing vertically thereon, a plate on said car body having notches arranged in a vertical series on opposite sides thereof, fluid operated cylinders arranged on opposite sides of said pivot each having a piston rod adapted to engage said plate in the lower notch on one side thereof to dump said car body, the latter being adapted to be righted by the engagement of a piston rod of a cylinder on the opposite side with an upper notch on said plate.

872,491. Brick Machine. Levi D. Wogoman, Versailles, Ohio. Filed Oct. 2, 1906. Serial No. 337,118.

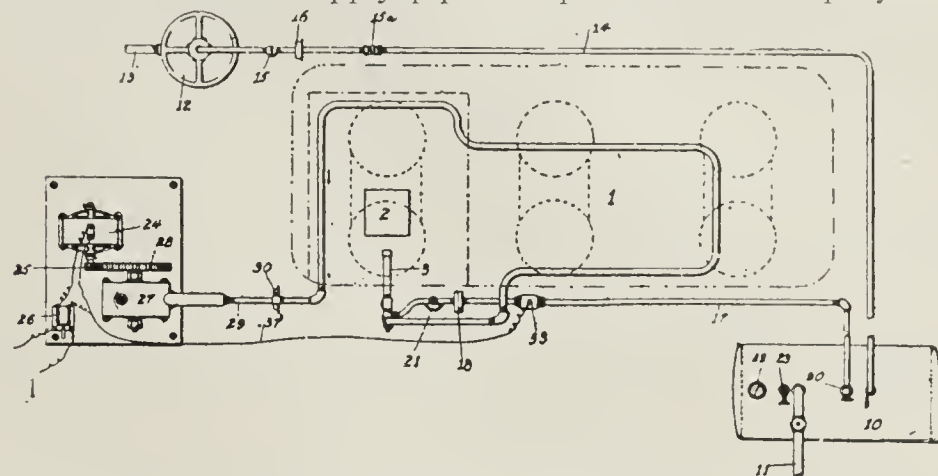
In a brick-making machine, a supporting frame, a power-shaft journaled in the frame and provided with a friction



pulley, an auxiliary shaft provided with a similar pulley adapted to engage the pulley on the power-shaft, a vertically movable mold-carrying frame, ejecting means disposed in the path of movement of the mold-carrying frame for exposing the bricks when the frame is moved to lowered position, a tamping element, a flexible connection between the auxiliary shaft and tamping element, an eccentric mounted on the auxiliary shaft for moving the pulleys into and out of engagement with each other thereby to raise the tamping element, and means for locking the tamping element in elevated position.

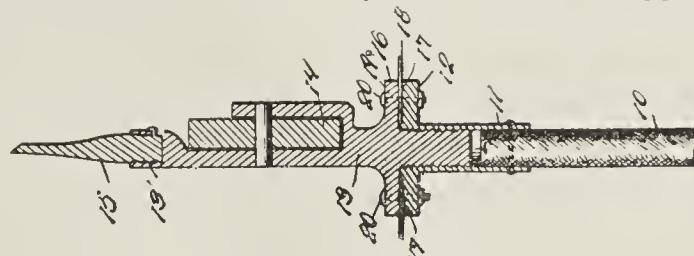
872,023. Oil-Burning System. Ira E. Smith, Stockton, Cal. Filed July 30, 1906. Serial No. 328,307.

In a oil burning apparatus, a fire chamber, a burner associated with said fire chamber, a fuel supply pipe connected to said burner, an air supply pipe leading through said fire chamber and connected at one end to said burner, means connected to the other end of said latter pipe for supplying air under pressure thereto, an electric motor, connecting means between said motor and the air supplying means, a valve in said fuel supply pipe and provided with a project-



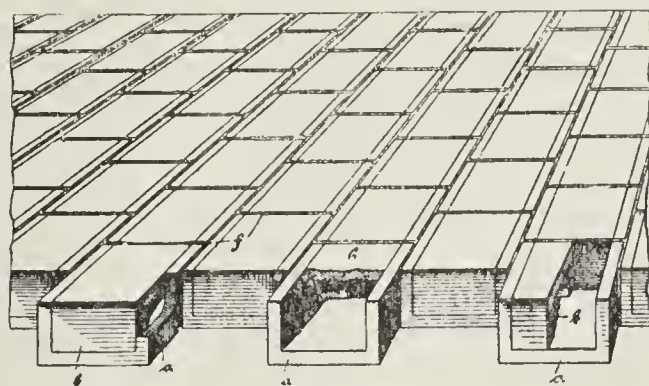
ing stem, an electro magnet adapted when energized to influence said stem and maintain said valve open, a spring operating to close said valve when the electro magnet is de-energized, and electric conductors between said magnet and motor.

872,109. Sewer-Pipe Cleaner. Thomas Cantwell, St. Louis, Mo. Filed Oct. 12, 1906. Serial No. 338,667.



The combination, with the flexible handle, of a head comprising a sleeve secured on the inner end of a handle and provided with an annular flange, a detachable extension provided at its base with a flange coextensive with and of a form corresponding to the first-mentioned flange, wires radially arranged between said flanges and means for clamping the flanges together on the wires, the said extension being further provided with a socket in its forward end for the reception of the shank of a tool and having a wheel-bearing to the rear of said socket, and a wheel larger in diameter than the flanges supported on said bearings.

872,098. Ceiling and Floor Composed of Tiles. Heinrich Westphal, Posen, Germany, assignor to Richard Faber, Fernersleben, near Magdeberg, Germany. Filed Jan. 12, 1905. Serial No. 240,725.



A ceiling or floor comprising hollow structures each consisting of two channeled tiles one embracing the other with the channels extending transversely to each other and the faces on the one closing the channel of the other and vice versa, said hollow structures being cemented together by suitable cement.

CLAY RECORD.

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"I like to read American advertisements. They are in
themselves literature, and I can gauge the prosperity of the
country by their very appearance."—William E. Gladstone.

When times are dull and people are not advertising is the
very time that advertising should be the heaviest. Ninety-nine
out of every hundred merchants advertise most when there is
least need of it, instead of looking upon advertising as the pan-
acea for their business ills.—John Wanamaker.

CONVENTIONS

The twenty-seventh annual convention of the Iowa Brick
and Tile Association will be held at Des Moines, Iowa,
January 22 and 23, 1908.

The eighth annual convention of the Wisconsin Clay
Workers' Association will be held at Milwaukee, February
12, 13 and 14th, 1908. Headquarters at the Hotel Blatz.

The fourth annual convention of the National Association
of Manufacturers of Sand-Lime Products will be held at
Columbus, Ohio, December 4, 5, 6, 1907.

The tenth annual convention of the American Ceramic So-
ciety will be held at Columbus, Ohio, February 3d and
4th 1908. Headquarters at the Hartman Hotel.

The third annual convention of the National Paving
Brick Manufacturers' Association will be held at Columbus,
Ohio, February 3d and 4th 1908. Headquarters at the
Southern Hotel.

The twenty-second annual convention of the National Brick
Manufacturers' Association will be held at Columbus, Ohio,
February 3d to 8th 1908. Headquarters at the Southern
Hotel.

The thirtieth annual convention of the Illinois Clay
Workers' Association will be held at Peoria, Ills., Jan. 14-15
and 16th 1908. Headquarters at the National Hotel.

Some men are born small and some others shrink.

A prosperous New Year to the readers of THE CLAY
RECORD.

Do your duty and subscribe for THE CLAY RECORD today.
Begin with the thirty-second volume.

The low rumbling sound you hear is the approaching of
the annual water wagon. Get your tickets early and avoid
the rush.

There isn't much hope for the man who is unable to con-
vince himself that he isn't just a little better than his
neighbor.

Hunt around and find your last year's resolutions. They
are as good as new and you can save money by using them
over again.

A diplomat is a man with an ax to grind who gets an-
other man to turn the grindstone and makes him believe
that he is being entertained.

You read the article in the last issue on "Steam Engine
as Applied to Brick Yard Practice," by the well-known
mechanical engineer, W. S. Stafford. As promised for this
issue, we are favoring you with one in this issue on "Steam
Boilers as Applied to Brick Yard Practice," by the same
well-known authority, and you are assured that it will be
followed with one on "Economical Power Plant Auxiliar-
ies." Read this one over and see if you can afford to miss
the rest of them.

A BIG YEAR WITH BANGOR BRICK YARDS

Five millions of brick have been made at the yards of the
Bangor (Maine) Brick Co., in Warren street during the
season just past, the largest output in the history of the
brick making industry in Bangor. Rarely have the brick-
makers had such weather conditions to contend with, yet
the number of brick lost by rain amounted to only 35,000,
compared with a half million lost in 1906.

In 1906, about 3,500,000 brick were made at the com-
pany's yards, three millions being merchantable.

The price of brick has changed but little during the past
two or three years. Brick which now sell for seven and
eight dollars per thousand were sold ten years ago for
\$4.75. Face brick which sold for \$6 per thousand in 1897
cannot be bought today for less than \$12.

The present management of the Bangor Brick Co. has
installed two new mud machines and these, and the two
sand machines can turn out about 60,000 per day.

OBITUARY

Mr. E. W. Face, a well-known citizen of Norfolk, Va., and member of the firm of E. W. Face & Sons, brick manufacturers, died at his home after a brief illness.

Herbert A. Johnson, an Odd Fellow and one of the best known operative potters in the Ohio Valley, died suddenly at his home in East Liverpool, Ohio, aged 45 years.

Frank Alsip, one of the best known brick manufacturers in the United States, died at his home in Chicago. He was 80 years of age.

Harry C. Wettengel, age 37 years, treasurer of the Central Brick Co., Pittsburgh, Pa., died at Salt Lake City, Utah, following an operation for appendicitis.

Peter Eno, one of the premier manufacturers of brick in Exeter, N. H., died at the hospital where he was taken to undergo an operation on a carbuncle on the neck. He was 65 years' old and leaves a widow, six sons and one daughter.

John K. Bickel, Nebraska City, Neb., died at his home, aged 52 years. He leaves a wife, two daughters and a son.

**PARTIAL PROGRAM OF THE 30th ANNUAL
MEETING OF THE ILLINOIS CLAY
WORKERS ASSOCIATION, PEORIA,
JAN. 14, 15, 16**

The program for the thirtieth annual meeting of the Illinois Clay Workers' Association, which is to be held at the National Hotel at Peoria, January 14, 15 and 16th, is nearly completed and ready for the printer. The following are some of the subjects selected and accepted by noted writers:

The Ceramic Department of the University of Illinois, and

What it is Trying to do C. W. Rolfe.

The Efficiency of Various Methods of Power Transmission William Simpson.

Fuel Consumption in Burning Brick and Tile A. Vogt.

How to Create an Increased Use of Drain Tile.

.....J. W. Mamer.

Brick and Tile Machinery R. T. Stull.

Clay vs Cement Fire Proofing F. W. Fitzpatrick.

How You Can Increase Your Profits by Incorporating.

Lessen Your Labor Troubles, etc W. W. Phillips.

Accident Insurance F. Plumb.

The Manufacture of Enameled Brick.....E. Hardy.

The Qualification of a Factory Superintendent,

.....Marion W. Blair.

The Manufacture of Hollow Building Blocks .H. B. Fox.

Electrical Transmission as Applied to Brick and Tile

Plants W. S. Stafford.

Present Demands for Brick in Architecture..... —

Personal Injury Actions Against Clay Companies... —

Stone Ware E. E. Spencer.

Controlling, Drying and Burning Operations

.....A. V. Bleining.

Some Work of the State Geological Survey on Fire Clays

.....E. F. Lines.

Beside these papers, there will be many other subjects for discussion.

ACCIDENTS, DAMAGES AND FIRES

H. A. Spencer has begun action to recover \$25,000 for the loss of a leg while at work in the plant of the Albert Lea (Minn.) Brick & Tile Company.

The commissary of the Bessemer (Ala.) Fire Brick Co. was damaged by fire to the extent of \$12,000, partly covered by insurance.

Andy Baird, of Bolivar, Pa., employed by the Lincoln Brick Co., had his hand blown off and his skull fractured by a dynamite explosion.

The Canadian Bank of Commerce have issued a writ in the High Court against the McIntosh Brick Machine Co., Limited, Sarnia, Ontario.

Andrew J. Gash, a brick manufacturer of Clinton, Ill., filed a petition in bankruptcy scheduling his liabilities at \$1,579 and assets at \$1,690.

W. B. Lower, Sioux City, Iowa, has been appointed the receiver for W. C. Ritz, the Sergeant Bluffs brick maker, and has taken charge of the plant.

Ole Hagen was crushed to death by a cave-in of earth at the clay pits of a Redwing (Minn.) clay works. Tons of earth fell upon him and he was buried alive.

G. K. Lien, engineer of the Los Angeles (Cal.) Pressed Brick Co., was burned about the face, neck and hands by an explosion of gas which scattered oil in one of the kilns.

Harry M. Thompson, of Almira, has brought suit against the mortgagees of the Cheney (Wash.) Brick & Tile Mfg. Co., to recover \$6,000 for machinery furnished to the company.

The plant of the Gadsden (Ala.) Brick Co. was damaged by fire to the extent of \$6,000, which is covered by insurance. W. T. Christopher is president of the company. The plant will be rebuilt.

Spence Russell, an employe of the Peebles Brick Co., Portsmouth, Ohio, was badly hurt by being caught in an avalanche in the shale bank. His leg was broken and he was injured internally.

An unknown man was found dead in a kiln of the Queen City Brick & Tile Works at Cumberland, Md. He had evidently crawled into the arched opening to get warm and the gases suffocated him.

J. Boice, of Pittsburg, who only recently secured a position with the Trumbull Brick Co., Warren, O., was struck by a train of the B. & O. Ry. He was taken to the Warren Hospital and will recover.

The Boone (Ia.) Brick, Tile & Paving Co., won out in the damage suit brought against it by one Gordon, for his son, 8 years' old, who received an injury to his leg while playing around the incline at the works.

Elser Eckerson, a wealthy Haverstraw (N. Y.) brick manufacturer, has been convicted of criminal nuisance on account of the land slides at his clay banks which destroyed life and property. He was indicted in the Supreme Court at Poughkeepsie.

The Plymouth Clay Products Co.'s plant at Ft. Dodge, Ia., is now working a full force. The power was applied and machinery began operations the 9th, inst. They make glazed sewer pipe of all sizes from the clay taken from gypsum mines.

PROSPERITY OF POTTERS IS LIKELY TO CONTINUE

One of the most important years in the history of American pottery is drawing to a close, and while profits have not been what the manufacturers would have liked to see for a 12-month business, yet the prospects for a greater business and an increase in profits for next year are brighter than ever, says our East Liverpool correspondent.

This was brought about at a recent meeting of the United States Potters' association held at the Hotel Schenley, Pittsburgh, a few days ago, when an all-day session resulted in the manufacturers from all parts of the country reaffirming their old selling lists, which in itself means that present selling lists will be strictly maintained next year, and that no special discounts will be given.

It has been said by many manufacturers that while the cost of raw materials and labor has been increasing constantly during the past year, yet American pottery has been placed on the traders' tables at practically the same price as a year ago. When the cost of production has increased and no increase made in the selling price, it must follow that the margins of the manufacturers have been reduced.

The fact that a high grade of china is now being produced in America shows that the American potter is making marked advances. From the old time Rockingham and yellow ware to a high grade of china has been the step taken by the American pottery manufacturer during the past decade. There is room in the United States for American-made china, and the manufacturers have been quick to grasp the opportunity to supply this ever increasing demand.

The fact that immense deposits of clay have been discovered in Texas which is well adapted to the manufacture of china has put new life into a number of manufacturers. In the past, the bulk of the china made in the United States was from a foreign body of clay.

The fact that the American pottery manufacturers produced during the past year more than \$1,000,000 more of pottery than a year ago, and that this amount is about double that produced three years ago, is a word picture showing how fast the American-made article is taking the place of the foreign article. And, the end of this increase is not yet in sight.

An interesting feature of the trade during the past year is the fact that no one advanced with a proposition to form a combination among the pottery manufacturers of the United States. For years, various eastern interests have taken up an idea of this sort, but in each instance failure was written across the result of their months of labor. It is stated that some manufacturers would be interested in such a proposition, but the majority believe there will never be a unity of interests among the manufacturing potters of the country.

By the starting of the Ford City pottery at Ford City, Pa., and the Wick China Company's plant at Kittanning, Pa., both, however, under the direct management of Charles Howell Cook, of Trenton, N. J., and the new 32-kiln plant of the Homer Laughlin China Company, at Newell, W. Va., tells the story of increases made in the production of

the country during the year. Several small potteries, some located at Derry, Pa., Salineville, O., and a few other small towns ceased operations, but the number of additional kilns started during the year is far in excess of the number which are idle. This is another illustration of the growing demand for American-made pottery.

It is related by many that hundreds of more people could be used in the operating departments of the potteries, but a careful glance over the trade shows that in some sections more people are leaving the trade to take up other vocations than there are entering the plants.

English potteries have been running very well during the past year, and while there has always been a goodly number of English pottery workmen seeking positions in the American plants every year, the number of those coming over this season is far below the list of past years. Yet it has never been denied that there was employment for all English workmen who have "ventured" a visit to the American potteries.

The manufacture of art ware among potteries of the country is increasing at a wonderful rate. Manufacturers have not been slow to develop talent displayed by a workman, and in doing this the trade has been benefited. The fact that American art pottery has been shipped into France, Germany, England and Russia during the past year shows that the ware is of a character to be admired by the most critical of pottery masters.

While the eastern part of the United States has for many years held the position of a leader in the production of pottery, this honor has been wrested from that district and placed in the west. In the eastern Ohio valley, the clay industry is thriving. New plants have been erected and additions made to others in order that production might be increased.

Pottery manufacturers believe that although 1908 is a presidential year, the production of pottery will show an increase over that of 1907. The general ware potteries have spared no effort to get a better line before the trade, and by close maintaining of selling lists, the year should produce good results.

LONG FIGHT OVER BRICK YARD

After almost two years of litigation, Lilburn M. Hess, Millville, N. J., secured a judgment against Frederick Roedel and Jacob Reick, for \$5000, before Circuit Court Judge Endicott. Reick and Roedel purchased a brick manufacturing plant from Hess two years ago and paid but part of the purchase price. Shortly afterward the plant burned down. Roedel collected the insurance money and placed it in his safe. He claimed that masked robbers forced him to turn the cash over to them.

Hess brought suit against Roedel for embezzlement. The charge was not proven and Roedel brought a counter suit against Hess for damages, charging false prosecution. Hess secured a non-suit. Hess then brought an action on contract and secured the verdict of \$5000. Sheriff Souder made a levy on the property of the defendants, who are engaged in the bakery business. A stay of execution has been granted on the filing of a bond.

BUILD NEW TOWN OF HOW KIM

St. Joseph (Mo.) capital has been invested in the building and maintaining of a large brick yard at How Kim, a new city in the northern part of Oklahoma. The company is made up mostly of local people and is capitalized for \$60,000. Work on the buildings has been going on for several months, and they are ready for use, simply awaiting the construction of the 2,000 foot spur from the main line of the Frisco system which passes the land owned by the company.

The plant will be in operation about the first of the year. It is estimated that fully 50,000 brick can be turned out daily. In the property there are eighty acres of brick shale. It is of good quality and it is said that there is enough on the land to run the yards for 600 years.

It is the plan of the company to plot some of the land for a town site. This will be done in the next month or so. A large cement company is planning to enter the ground. The officers of the company are: President, H. Kimber of St. Joseph; vice-president, Charles E. Thornton, St. Joseph; secretary and treasurer, N. B. Howard, Cottonwood Falls, Kas.

MUST MEET DEMAND FOR ENAMELED BRICK

Owing to the urgent demand for enameled and fancy brick in the rebuilding of San Francisco the unfinished plant of the Stockton Fire and Enameled Brick Company began operations the 19th. A large force of men is engaged in completing the \$100,000 plant, while another crew is employed molding brick and working the three completed kilns to furnish contractors with building material.

It is urged on the management of the plant that it practically is impossible to secure fire and enameled brick in sufficient quantities on the coast and that unless more material can be obtained contractors will lose heavily. It was not the intention of the local factory to start the fires in the new kilns before the first of the year, but they have been practically forced to answer the demand for material.

BRICKYARD OWNER FOUND GUILTY OF MAINTAINING CRIMINAL NUISANCE

Elser Eckerson, a wealth brickyard owner, of Haverstraw, N. Y., was convicted by a jury in the Supreme Court at Poughkeepsie of maintaining a criminal nuisance. The trial of the case occupied a week before Judge Mills. It aroused interest on account of the slide of clay banks in Haverstraw several years ago which killed a number of persons.

Mr. Eckerson was indicted under the law relating to criminal nuisance. Charges were made that he has excavated in brickyards which he owns or leases so near the street that he has endangered the roadway and people who may have to pass over it. The trial of the case was moved to Dutchess County on the ground that it could not be impartially tried in Rockland County, where the indictment was found.

Justice Mills postponed sentence. He said the nature of the offense would not warrant a sentence of imprisonment, and he would impose a fine with a view to the expense of the trial, the cost of which is borne by Rockland County. There are other indictments of a similar nature pending against Mr. Eckerson.

CAN'T EXEMPT COMPANY FOR TAXES

Judge Evans, in the district court, made permanent the temporary injunction restraining the city council from furnishing the Plymouth Clay Products Company, Ft. Dodge, Ia., free water and exempting it from taxes for a period of ten years. The firm recently built a new sewer pipe factory at the edge of the city, which will start up next Monday with a force of fifty employes. The corporation is composed of home capitalists and the council granted the petition of the Commercial club for free water and taxes, as is commonly granted by other cities as an inducement for new factories to locate. The council granted the request but the injunction compels them to violate their agreement. The injunction is the first of its kind in the state.

DECISION COVERING BRICK SHIPMENTS IN KANSAS

The Commission, in an opinion rendered by Commissioner Prouty, has announced its decision in the case of the Coffeyville Vitrified Brick and Tile Company against the St. Louis and San Francisco Railroad Company and Chicago, Rock Island and Pacific Railway Company.

It appeared in this case that complainant shipped one car of brick from Coffeyville, Kan., to Duncan, I. T., over defendants' lines, via Chickasha. The shipment was a through shipment, but the joint through rate applied to it was more than the sum of the locals based on Chickasha. The complaint was that the through rate should not exceed the sum of the locals, and the complainant stated that it filed its petition with a view to obtaining a general ruling of the Commission that through rates must not exceed the sum of the locals.

The Commission decided that it can make no such general ruling, but each case must be disposed of upon its own merits. An order was granted, however, awarding reparation and requiring defendants to put in force a joint rate not exceeding the sum of the locals between these particular points on shipments of brick.

AUTOMOBILE PARTY'S MIRACULOUS ESCAPE

Sitting in their automobile and carried for fifty yards on the cowcatcher of a passenger engine, every instant expecting to be ground beneath the wheels of the train, was the harrowing experience of S. J. Hewson, president of the Menominee (Wis.) Pressed Brick Company, and Frank Peck, superintendent of the Menominee branch of the company, in Minneapolis, Minn., Dec. 17th. They escaped, however, without a bruise.

The two were returning from St. Paul. When they approached the Oak Street crossing of the Great Northern, Mr. Hewson, who was driving, saw no signals indicating the approach of a train, and after slowing up a moment, started across the track at full speed. When the track was reached he saw the passenger train almost upon him. Instead of trying to pass directly in front of the engine he, with remarkable presence of mind, circled the machine.

The automobile was caught upon the fender and carried some distance with the two men in it.

As the train was running at the rate of ten or fifteen miles an hour it was brought to a stop quickly. The automobile was partially wrecked.

ENTIRE ITALIAN FORCE AT KERLIN BRICK PLANT LEFT

Thirty-eight men left the Kerlin Brick Company's plant at Logan, Ohio, and went to Columbus. The men were all Italians and their contention was that they quit on account of a dispute in wages. They said their hours had been cut from ten hours a day to eight hours which would only give them \$1.25 a day. On account of this cut in time it so reduced their wages to such an extent that they decided they must make more money, and they asked that they be paid \$1.60 a day, which the company refused to do, consequently the laborers left their work.

The company places the matter in a different light, saying that the shut down of the old plant was not due to the scarcity of men or labor troubles, but because they had received orders for sidewalk brick amounting to five or six kilns and that this would necessitate the changing of the machinery and brick dies which would cause them to close down for some time.

The reduction of the time of the Italian employes was made in order that they might be retained until the repairs could be made and operations could be resumed but their demand for higher wages could not be met and they were allowed to leave. The labor situation at this plant is not at all critical, however, as the company can get all the men they want and their present closing down of the old plant is not due to such a matter.

BRICK PLANTS MAY BE DIVIDED

At a meeting of the Montello Brick Company, Reading, Pa., the principal business transacted was the discussion of the plans which are well under way for a general reorganization of the company. Although, at this time it cannot be said positively that any definite steps have been taken, it is thought that the foundation for reorganization has been built.

The plan of reorganization appeared satisfactory to all present. The feature is the proposition to separate the various plants of the company.

This is practically to give the bondholders of the Oaks plant, the most valuable, which, it is said, cost \$750,000, and the Perklomen and Perklomen fire brick plants.

It was conceded that the bondholders would get all of their money back and they as well as all other investors would be fully considered and protected in the reorganization.

The Wyomissing, the Montello and the Reading Shale Brick plants, the northern ones, it was argued, should be operated by the Montello Company.

It appears from the plans discussed that majority bondholders, minority bondholders and stockholders of the company are nearing an amicable agreement, which will result in the operation of the plants and the withdrawal of the Montello Brick Works bankruptcy proceedings.

"We want to make brick and stop the expense of the bankruptcy proceedings which will result in the payment of terrific fees," said a prominent bondholder and who was one of the original minority bondholders, "and I think that since the plan has been considered and general satisfaction appears to have been the result, reorganization will follow within a short time and all interested will be equitably and satisfactorily dealt with."

PAVING BRICK MEN HAVE TARIFF AGENT

At a meeting of the subcommittee of the tariff committee of the National Paving Brick Manufacturers' Association in Cleveland, John F. Lent, of Pittsburg, was appointed to represent the association in the matter of railway tariffs. Mr. Lent, who is a railway man of experience, will have charge of all the railway questions affecting the association. The association is said to represent about 95 per cent of all the paving brick output of the United States.

BRICK FAMINE IN YAKIMA

There is a brick famine in the Yakima valley, Wash., which is retarding to an extent building operations. There are practically no bricks in North Yakima, nor at Toppenish, while there are not more than 200,000 at Granger, where they are manufactured. As brick is being used quite extensively in building in this section the contractors have been forced to import them from other cities. At Toppenish work has been postponed on some of the new structures for want of material.

THE PETTYJOHN COMPANY UP-TO-DATE

The Pettyjohn Company of Terre Haute, Indiana, is in receipt of a very gratifying letter from Mr. S. W. Sharp, who is one of the users of the Pettyjohn portable upright model block machines in Claremont, Virginia. Mr. Sharp writes:

"We have just finished a large barn 40x60 feet, two stories high; 12-inch blocks were used in the walls and my men made on this job on one machine, which was the one purchased from you about two years ago, 600 blocks size 7½x20x12 inches in ten hours with five men mixing the material by hand and doing all the work. Can you beat that? If you can we will make another record."

Mr. Sharp further wrote that his blocks had attracted much favorable attention, and that he had had many inquiries as to what machine they were made on and what machine was the best. His invariable reply was that the Pettyjohn portable machine is the best and fastest on the market.

In this connection, The Pettyjohn Company advise that they have now passed the 6,000 mark for sales on this particular type of machine, and that every one of the machines was sold under a binding guarantee to give satisfaction or money refunded.

A number of recent shipments have been made to various departments of the United States government, several of which were duplicate orders to the same department. Quite an extensive work is being done at the Brooklyn Navy Yard with machines of a special size, built to order for the heavy work usually called for in government specifications.

The Standard Oil Company and its branches now has in active service over 43 of the Pettyjohn upright model machines. These are principally used along the various pipe lines for the purpose of building pumping stations, warehouses and office buildings. More recently the experiment has been tried in using the blocks for the erection of tall smoke-stacks which is a necessary adjunct to the pumping stations. This experiment has evidently proved successful as the oil company is now getting estimates for the erection of a number of additional smokestacks of similar type.

SAND OR LIME BRICK OR BLOCK NEWS

The Detroit (Mich.) Pressed Cement Brick & Block Co. has been incorporated with \$10,000 capital stock.

The Avram-Leet Engineering Co., of New York City, is considering the establishing of a composite brick factory at Little Rock, Ark.

The Cement Tile Machinery Co., Waterloo, Ia., displayed at the Chicago Cement Show a tile-making machine which created interest among visitors.

Charles M. Brooker, superintendent of the Colonial Brick Co., Kokomo, Ind., has purchased a Buick auto. The manufacture of glass brick must be good.

The white brick of the San Antonio (Texas) Brick Company have been excepted by the architects and contractors so that they cannot supply the demand.

N. W. Dunham, of Dallas, Texas, is at the head of a company that will build a \$50,000 sand-lime brick plant at Ardmore, Okla. Natural gas will be used for fuel.

Z. C. Balch, founder and president of the Mercantile Bank at San Antonio, Texas, and others, are seriously considering the building of a sand-lime brick plant in Mexico City, Mexico.

F. H. Smith, of the Wilmington (N. C.) Granite Brick Co. was at the Columbus convention, which was the first sand-lime convention for him. He was a very enthusiastic member. He will make a success of the plant which was the first sand-lime brick plant in America.

I. H. Allen, of the Winchester (Ky.) Granite Brick Co., attended his first convention of the sand-lime brick makers at Columbus. He was the most enthusiastic sand-lime brick man at the meeting. The only complaint that he had was that he could not turn out the brick fast enough to fill his orders.

Lawrence Comerford, the sand-lime brick expert formerly of Little Rock, Ark., has taken charge of the Savannah Sand-Lime Brick Co.'s plant at Eden, Ga., and is turning out more and better brick than the plant has ever been able to turn out before. The white brick are certainly making a hit in southern Georgia.

The King-Crown Plaster Co., Cedar Rapids, Iowa, are running their sand-lime brick plant all winter on account of the demands for their brick. It is necessary to break the ice to get the sand from the river. They have just ordered a 100-h. p. generator and a 50-h. p. motor to run sand pumps and are installing a complete electric light plant to light the works. They are over a 1,000,000 brick behind in their orders.

SMOTHERED A CATAMOUNT IN BRICK KILN

Levi H. Kissinger, proprietor of the Windsor Park Brick Works, on the outskirts of York, Pa., smothered to death a large catamount in a corner of a brick kiln after a fierce fight. He thought the creature a big tomcat and was "shooing" it out of a dark corner of the kiln, when it sprang at him.

Although the attack was unexpected, Mr. Kissinger threw the animal from him, and stripping off his coat, ran after it. He succeeded in wrapping the garment about the creature's head and held it tight until the struggles ceased.

It is thought the animal must have strayed in from the near-by hills for food. It weighed 18 pounds.

CLAIMS C. & O. OVERCHARGED IN FREIGHT

What will prove an important test case is a suit filed by Judge George M. Osborn for the Kentucky Fire Brick Co., at Portsmouth, O., against the C. & O. Railway, in Squire Shakespeare's court.

Suit is brought for \$56 alleged overcharges on freight on shipments of six carloads of brick from the company's plant at Haldeman, Ky., to the Tennessee Iron and Coal Co., at Ensley Ala.

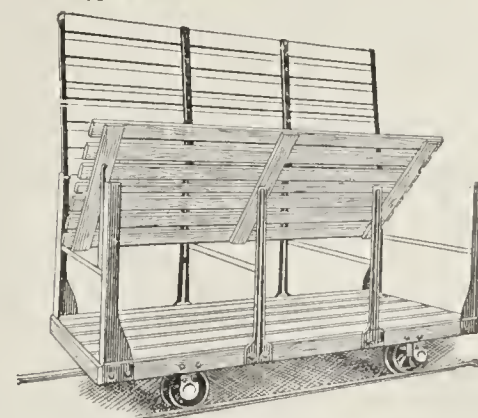
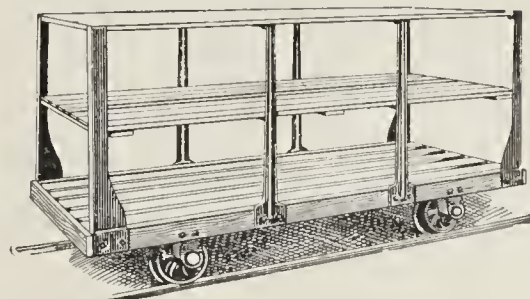
The C. & O. Railway has no scales at Haldeman, and the company has had to calculate shipments, the railway being governed by weight of same at Lexington, Ky. It is alleged that the shipments showed overweights of from a ton and a half to four tons each.

BRICK FROM BRAZIL TO FRISCO

Manager Harry Walters, of the Brazil, Ind., branch of the Hydraulic Pressed Brick Company, has received orders to begin shipping brick from the local plant to San Francisco, where brick of Brazil manufacture will go into the construction of the new Palace Hotel, which was destroyed by the recent earthquake. All of the facing brick in the new hotel, which is to be the finest building on the Pacific coast, will be made in this city. The number required is 1,250,000 and 125 cars will be necessary to carry them. All of the facing brick are to be shipped within sixty days. The brick are what are known as vitrified pressed brick, manufactured only in this city.

The Lightest Running Dryer Car Made

having a dust proof roller bearing
box made of steel. No oil needed.
Write for description and prices



Vulcan Iron Works

MASON CITY,
IOWA

MISCELLANEOUS ITEMS

The Lexington (Ky.) Brick Co. has been incorporated with \$35,000 capital stock.

J. W. Barlow of Shelbyville, Ind., is at the head of a movement to establish a tile factory at Henryville.

The new plant of the National Drain Tile Co. at Streator, Ill., will be ready to operate the middle of January.

The Algodones Pressed Brick & Tile Co.'s plant at Tonque, N. M., will be ready to operate by the first of the year.

I. C. Johnson, head of the Building Committee of the Oskaloosa (Ia.) Commercial Club, is trying to land a brick factory.

W. L. Birdsell has bought Geo. W. Fuhrman's interest in the Berthoud Brick Works and the firm is now Birdsell & Ferguson.

Contractor P. S. Phillips has started the work of constructing a new boiler house for the Hanover (O.) Red Pressed Brick Co.

The Mountville (Pa.) Brick Co. has shut down to install machinery for the manufacture of pressed brick. J. H. Minnick of York is the manager.

The Alpha Portland Cement Co. has voted to increase its capital stock from \$2,000,000 to \$6,000,000 to provide for present and future requirements.

The Ironton (O.) Portland Cement Co. has been sold to Toledo and Detroit capitalists, and a great merger of plants in Michigan and Ohio is to be formed.

J. T. Underwood of Springfield, Ills., has gone to Hernaldo, Sonora, Mexico, to construct a large brick plant, introducing modern American machinery.

The Bangor (Maine) Brick Co. contemplate installing two steam machines to replace the old sand machines. This will materially increase the capacity of the yard.

The Tioga Red Brick Co., Ithaca, N. Y., has been incorporated with \$30,000 capital stock by George W. Cook and C. H. Chapman of Ithaca, N. Y., and S. Howard of Scranton, Pa.

The Amarillo (Texas) Press Brick & Tile Co. are now ready for the plant of the company, and the men are now at work getting the machinery into place. B. H. Lewis is the manager.

The Meadville (Miss.) Brick & Lumber Co. has been incorporated with \$25,000 capital stock by M. C. Bradley of Meadville, L. E. Schilling, E. C. Schilling, of Magnolia, and C. V. Ratliff of Summit.

Judge Evans at Fort Dodge Ia., has made permanent the temporary injunction restraining the city from furnishing the Plymouth Clay Products Co. free water and exempting it from taxes for 10 years, as the city council agreed.

The Florida Clay Co., Talaha, Fla., has commenced operations. The electric power plant recently put in to operation is doing excellent work. C. J. Dashiell, the manager has use for 100 more laborers to further develop the work.

The Monatgue City. (Mass.) Pluminense Carbon & Brick Co. has been incorporated with \$150,000 capital stock. C. P. Wise of Turners Falls is president, W. C. Davis of Readsboro, Vt., vice-president, and W. H. P. Gilmore of Turners Falls, secretary and treasurer.

I. J. Dickens has organized a company at Monticello, Ark., for the manufacture of drain tile.

Capitalists of Redwing, Minn., have secured an option on the Ft. Dodge (Ia.) Brick & Tile Works, same being given for \$80,000.

The new plant of the Niles (O.) Fire Brick Co., has been started again. At the old plant the men will also be put on so that it will be full-handed.

The Dewey Brick & Construction Co., York, Pa., whose plant burned causing a \$12,000 loss, was insured in ten companies to the amount of \$9,000.

Louis Vogel, of Weir, Kan., is looking up the methods of brick and tile manufacture with a view of working the seven-foot vein of fire clay on his land.

The Baltimore (Md.) Vitified Clay Co., 22 Abell Bldg., will immediately rebuild their plant which was recently damaged to the extent of \$3,000 by fire.

The Findlay Clay Pot Co., Washington, Pa., which has been practically closed for several weeks, has put a force of men at work and later will double the capacity.

The manufacture of brick at the Prairie View (Texas) Normal and Industrial College will become a permanent feature of the school. About 50,000 brick are being made daily.

The Kaysville (Utah) Brick Co., which was capitalized at \$50,000, has been increased to \$100,000 and the daily capacity is 125,000 brick. Gustav Voelcker is the manager; 120 men are employed.

The Milldale (Conn.) Brick Works, which was bought from C. H. and H. H. Clark by Joseph Fontana, is to be operated by the late Mr. Fontana's partner as a settlement is being made with his estate.

The officials of the St. Louis Clay Industries talked shop at the Planter's Hotel the evening of the 12th. George A. Gamett, of the Laclede-Christy Clay Products Co., is secretary of the informal organization.

The Columbia Clay Co., Kennewick, Wash., is now making brick with a force of ten men and are at present burning brick for the purpose of building their permanent kilns. Afterwards they will make brick for the trade.

L. I. Hackett, superintendent of the Porter, Ind. yards of the Hydraulic Press Brick Co., has announced that the plant would resume operations the beginning of the year. Large orders were received and prospects are exceedingly bright for others.

THE ANTON VOGT DOWN DRAFT KILN

For Sewer Pipe, Drain Tile, all kinds of Brick and hollow Building Material. Cheap and simple. Don't fail to investigate this Kiln, it delivers the goods. To purchasers of Plans and explicit instructions of how to build, set and burn Kiln my bureau of valuable practical information is **FREE**

ANTON VOGT, Ada, Okla., U. S. A.

Work on the foundations for the new tile works at New Salisbury, Ohio, has been commenced.

The Illinois Brick Co. has declared the customary quarterly dividend of 1 per cent, payable January 15, 1908.

The American Sewer Pipe Co. has declared the regular quarterly dividend of 1½ per cent on its capital stock, payable January 2, 1908.

Viola, Ill. may have a new industry using the red shale on the W. H. Riddell farm north-east of the town. A. Gillett, of Aledo, is to be interested in the industry.

J. F. Berry has organized a stock company to build a pressed brick plant at Mount Pleasant, Texas. Work will begin in a short time to build the sheds.

The Kenilworth Tile Co., Newell, W. Va., will enlarge its business. A change of management has been made as Claude Nease of East Liverpool, Ohio, has secured control.

T. M. Allbrook of Delhi, Iowa, and the Oskaloosa (Ia.) Commercial Club, expect to build a brick plant at Oskaloosa that will cost \$200,000 and employ 400 men the year around.

The Hydraulic Brick Co., Louisville, Ky., has been incorporated with \$350,000 capital stock, which is a transfer from a New Jersey company. The company has long been in existence.

Stephen Birch, proprietor of the North Dakota Tile Works at Fargo, has returned from Salt Lake City, Utah, where he has had contracts for over one million dollars' worth of work.

It is the intention of the Albert Lea (Minn.) Brick & Tile Co. to greatly enlarge their facilities next year so as to properly take care of their trade. Mr. Rushfeldt is president of the company.

The Bippus (Ind.) Tile Company will rebuild their plant, which recently burned to the ground, in the spring. Some of the farmers in the vicinity agreed to place orders and pay in advance for them.

The Queen Brick & Lime Co., Seattle, Wash., has been incorporated with \$75,000 capital stock. Incorporators are: M. F. Shaw, R. L. Lusby, G. B. Lazier, L. M. Presnall, H. C. Applegate and L. S. Treen.

The T. B. Townsend Brick & Contracting Co., Zanesville, Ohio, will increase the capacity of their already large plant soon after the new year. The managers are now making investigations with that purpose in view.

With eight gypsum mills located adjacent to Ft. Dodge, (Iowa) there is every evidence to believe that another will be erected within a very short time. The Ft. Dodge Gypsum Company are planning such a move to supply their trade.

The Utica Shale Pipe Co., St. Lambert, Que., has been incorporated with a capital of \$20,000, to manufacture brick, sewer pipe, earthenware, glassware, etc. The charter members include W. K. Lowden, St. Lambert, Que.; J. Rodger and W. M. Laurie, Montreal.

The Credit Valley Brick Co., Toronto, Ont., have been incorporated with a capital of \$50,000, to manufacture brick, sewer pipe, tile, pottery, etc. The provisional directors include W. Schumacher, Glen Williams, Ont.; G. A. Turner and W. B. Bentley, Toronto.

Brickmakers in New South Wales, Australia, earn about \$10 a week.

The Alonzo Curtis Brick Co., Grant Park, Ill., has closed down their factory until spring but are shipping out from 10 to 15 carloads of brick daily.

Oakville, Ontario, is asked to guarantee 5 per cent on a \$30,000 first mortgage bond to help establish a tile and electric conduit factory that will employ 50 hands at an outlay of \$123 daily for labor.

The Western Fire Clay Products Co., Ltd., is about to build a brick and sewerpipe works at Yellow Grass, Sask. Charles West, of Winnipeg, Manitoba, is interested. The company will employ 100 men.

Charles Hank, president of the International Brick, Tile & Terra Cotta Workers' Alliance, was arrested at Nelsonville, Ohio, in connection with a strike at a factory. Trespassing was charged against him.

Mr. M. C. Burke, of the Burke Brick Co, Ft. Smith, Ark., states that the plant will be started up again after the new year as they had sold some of the paving bonds and had prospects of disposing of many more.

The Pine Bluff (Ark.) Brick Co. will close the year with the satisfaction of having done the largest business in its history. They have been shut down to make repairs and will open up again with the new year.

The Great Kanawha Brick & Tile Co., Charleston, W. Va., has been organized with \$100,000 capital stock to buy, sell and deal in clay properties. The incorporators are: J. W. Jenkins, C. E. West, H. D. Rummell, U. Higginbottom and M. Lorberg.

DIRECT HEAT

DRYERS

— **FOR** —

**BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.**

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue W. C.

American Process Co.,
62-64 William St. NEW YORK CITY

DUMP CARS FOR SALE

A few good, "Main Line" Dump Cars. Will be put in A-1 condition. Write for description.
Detroit Car Building and Equipment Co.
Detroit, Mich.

BRICK AND TILE MACHINERY AT SACRIFICE

Where a country is tiled, factories are offered complete, or in part, Cheap. Have several Brewer Mills for sale, and others.

Engines, Boilers, Crushers, Drying Pipes, etc. If you wish to buy or sell write

Brick and Tile Machinery
Secor, Ill.

FOR SALE

One power Repress, in number one condition, used only but a short time; capacity 10000 per day. Ask for full particulars.

American Enameled Brick & Tile Co.
1 Madison Ave. New York

NOTICE

To American Clay Machinery Manufacturers—A sound proposition for N. W. Alberta, Can. Articles of Association have been signed for Eason's Brick & Tile Co., Ltd., for \$24000, of 240 shares, at \$100 each at par. To equip a complete brick making plant on field of 60 acres, proved at 40 feet and analyzed by the Henry Martin Brick Machine Mfg. Co., of Pa., U. S. A., whose tests are satisfactory for a good sound brick

The situation of the field is close to the Railway Siding of Claysmore, on the C. N. R., 6 miles from Vermilion City. The Bull's-eye of the famous Saskatchewan Valley, and the Vermilion district, where brick are now selling at \$20 per thousand and in great demand at that.

We desire to correspond at once with any firm who will put a fully equipped up-to-date plant on the field, on an acceptance backed by fully paid up stock, who may recommend a capable manager, to engage himself with our company if salary agree upon. Address

ALEXANDER EASON

Pioneer Builder and Contractor

Vermilion, Alta.

Solicitor

K. V. Fieldhouse, Esq., L. T. B.,

Vermilion, Alta.

FOR SALE CHEAP

Two American Clay Machinery Company's No. 23 combined brick machines, with repair parts sufficient to make machine first-class. Capacity 7500 to 10000 per hour. Greatest bargain. Write for particulars.

GREAT EASTERN CLAY CO.

39 Cortland St., New York

BRICK PLANT WANTED AT JACKSONVILLE

One of the best places in the whole country to establish a small up-to-date, modern Brick Plant, local consumption 3,000,000 annually. Abundance of good clay. No competition. Will give detailed information upon application to the

BUSINESS MEN'S ASSOCIATION

Jacksonville, Illinois

POSITION WANTED

I have had twenty-two years' experience in fire clays, brick, hollow brick, building tile gas retorts and settings. Understand making magnesite and silica brick; want position as superintendent.

W. T. J., care Clay Record,
Chicago, Ill.

POSITION WANTED

Young man desires a position as Superintendent or sales manager, understanding stiff mud and dry press process. Has traveled all over.

TRAVELER, care Clay Record,
Chicago, Ill.

FOR SALE

One No. 2 Potts & Co. Clay Disintegrator. Used only six months. Address

C. SOLFISBURG SONS

Aurora, Illinois

WANTED

12 offices covering entire brick, clay and building material field. Positions open for office, sales and technical men. Service confidential. Write, stating age, experience and location desired.

HAPGOODS,

305 Broadway, New York City, or
1010 Hartford Bldg., Chicago, Ills.

BRICK YARD FOR SALE

Old established yard in good town of 5,5000 people, with good country surrounding. 45 acres, good kilns and sheds. Good reason for selling. Call on or address

CHARLES MCNEAL

Maryville, Mo.

FOR SALE.



Right and left-hand One, Two and Three Way Switches, of various gauges, radius and weight rail, at special prices.

THE ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE—CHEAP—New and re-laying rails, 12, 16, 20 and 25 pound. For prices, address

ATLAS CAR & MFG. CO.,
Cleveland, Ohio.

FOR SALE

Brick manufacturing plant, capacity 40000. Six mould dry press, small planing mill and lumber yard. Good shipping territory and an established paying business. Address:

4. J. CARE OF CLAY RECORD

Chicago, Illinois

PLANT FOR SALE

A practically new brick and tile plant in north west Missouri for sale on account of health have decided to sell at about one-fourth cost. Soft mud and stiff mud machinery, engine, boilers and sheds for 8,000 brick daily. Two Clamp kilns and Stewart kilns. Plant runs steady and can't supply the demand at good prices.

Write to J WYNN

Weldon, Iowa

WANTED

A thoroughly competent and reliable Superintendent to manage a stiff mud brick plant at Columbia, Mo. Capacity 25,000 a day, output principally pavers.

Must have A1 references, no other need apply. Address or reply in person.

EDWARDS BRICK CO.,
Columbia, Mo.

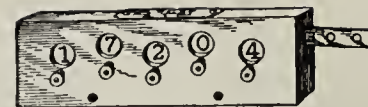
PARTNER WANTED

A good, reliable man of experience, with some capital to invest in and take charge of a new Dry Press Brick Plant. Plenty of shale, and good market for all the brick. Address

DENIS, care Clay Record,
Chicago, Ill.

FOR SALE

Second-hand presses of different sizes and makes. Good machines and low prices.
THE FERNHOLTZ BRICK MACHY. CO.,
Old Manchester Road
St. Louis, Mo.



No better made, cut from \$3 and \$10, to

4 Wheel, \$3.00
5 Wheel, \$3.25

Guaranteed.

Sold by all dealers

R. A. HART, 41 White St.,

BATTLE CREEK, MICH

SUPERINTENDENT WANTED

A superintendent for a stiff mud and fire brick plant. One desired that can buy an interest in the company. SUPERINTENDENT.

Care Clay Record, Chicago, Ill

CARS WANTED

WANTED—Second hand cars and track. Give lowest price and condition in first letter.

Box 81.

Independence, Iowa

PALLETES FOR SALE

We have a large number of second-hand wood pallets, size 34 by 10 inches. Can be bought cheap. Address,

MARTIN

Box 587

Lancaster, Pa.

POSITION WANTED

Position as Superintendent or Manger of Paving Brick Plant, thoroughly competent to take charge of construction and operating in every detail. Have good position at present, but dislike location. A-references. Eastern plant preferred. Address

"PAVER" Care of CLAY RECORD

Chicago, Illinois

FOR SALE

A 9-foot American Clay Machinery Co., Dry Pan in first-class condition. Will sell cheap to avoid moving.

SMITH BRICK COMPANY,
Omaha, Neb.

ASTORIA

One of the best places in the whole country to establish brick-making plant. Now having all available clays scientifically tested and will give detailed information upon application. Water transportation all along Pacific Coast and Columbia River. No brick-making plant within 100 miles.

709 Chamber of Commerce,

Astoria, Oregon

BRICK YARD FOR SALE

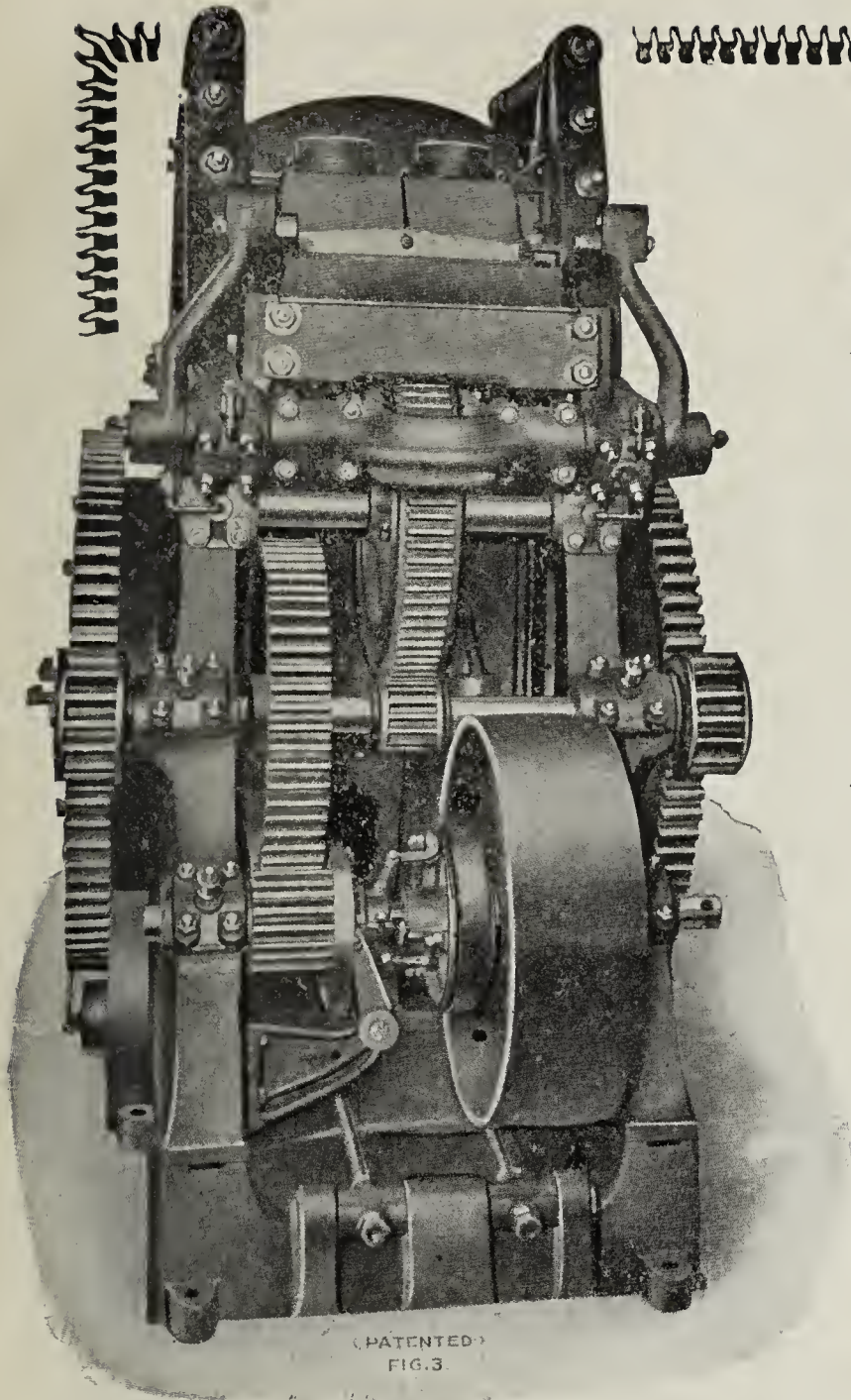
Owing to death of owner, estate will dispose of only brick yards in railway town of 6,000 in Central Illinois. Thirteen acres inexhaustible clay and water supply. Just outside of corporate limits, on main road and adjoining Railroad yards. Will sell cheap.

Address G. E. B., care Clay Record,
Chicago, Ill.

SHALE CLAY FOR SALE

Have bed of red, chocolate and blue shales exposed full length of 3,500-foot railway cut and to height of 90 feet. Three miles from business center of Des Moines, growing city of 100,000. Big center for clay products. Over 2,000,000 tons coal mined annually. Shales suitable for hollow block, brick, paving block, tile, sewer piper. On river. Level ground for factory sites. Twenty-five acres for sale.

Write Inter-Urban Railway Co.
Des Moines, Iowa.



Rear View

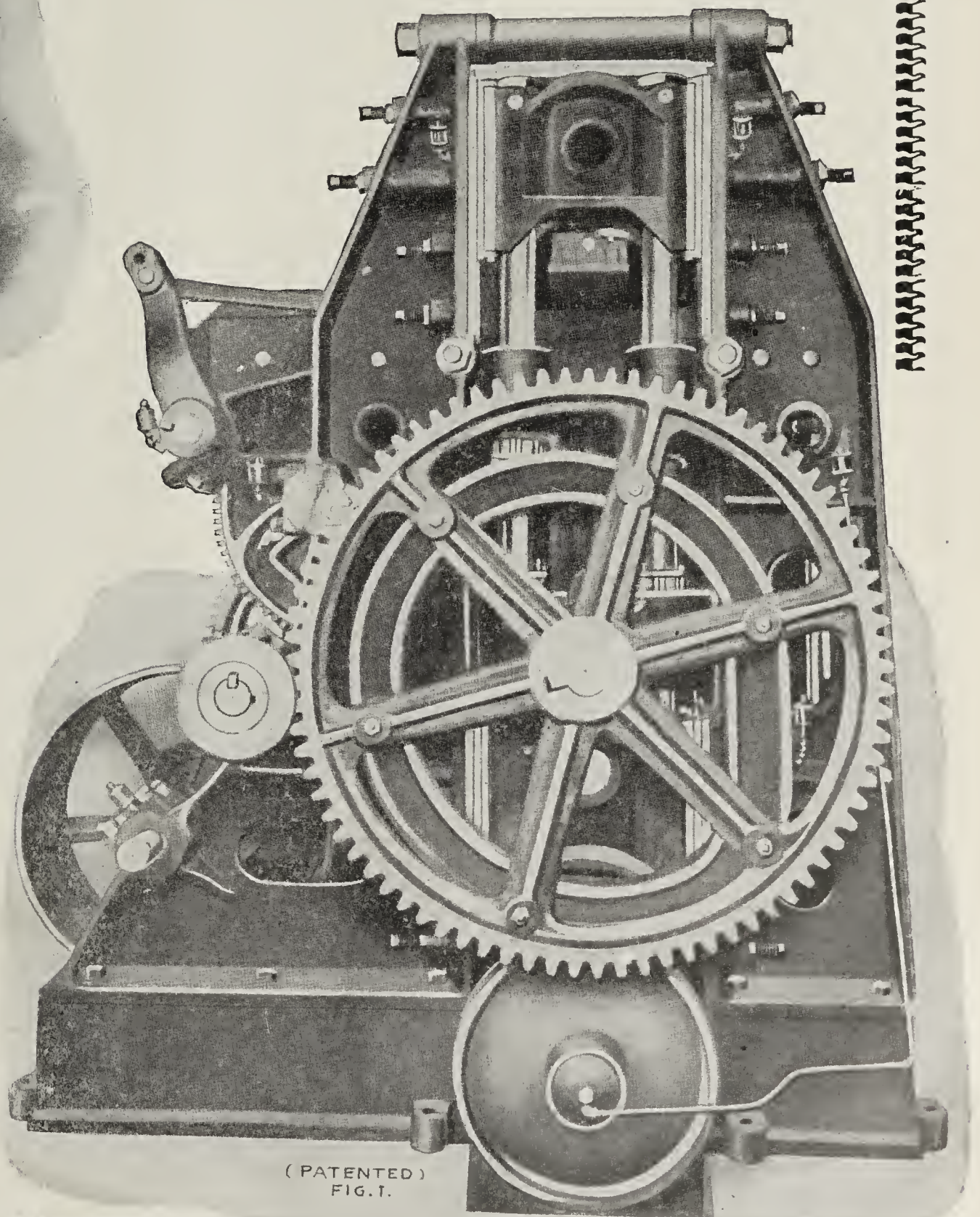
We Design and Equip
Dry Press Brick Plants
COMPLETE

Write to-day for Particulars
Send a Sample of your Clay.

The **Reliance**
Machine and
Tool Works
St. Louis, Mo.

RELIANCE BRICK PRESS

The only Machine Making Brick
Without Granulated Centers
No Toggles Powerful Simple

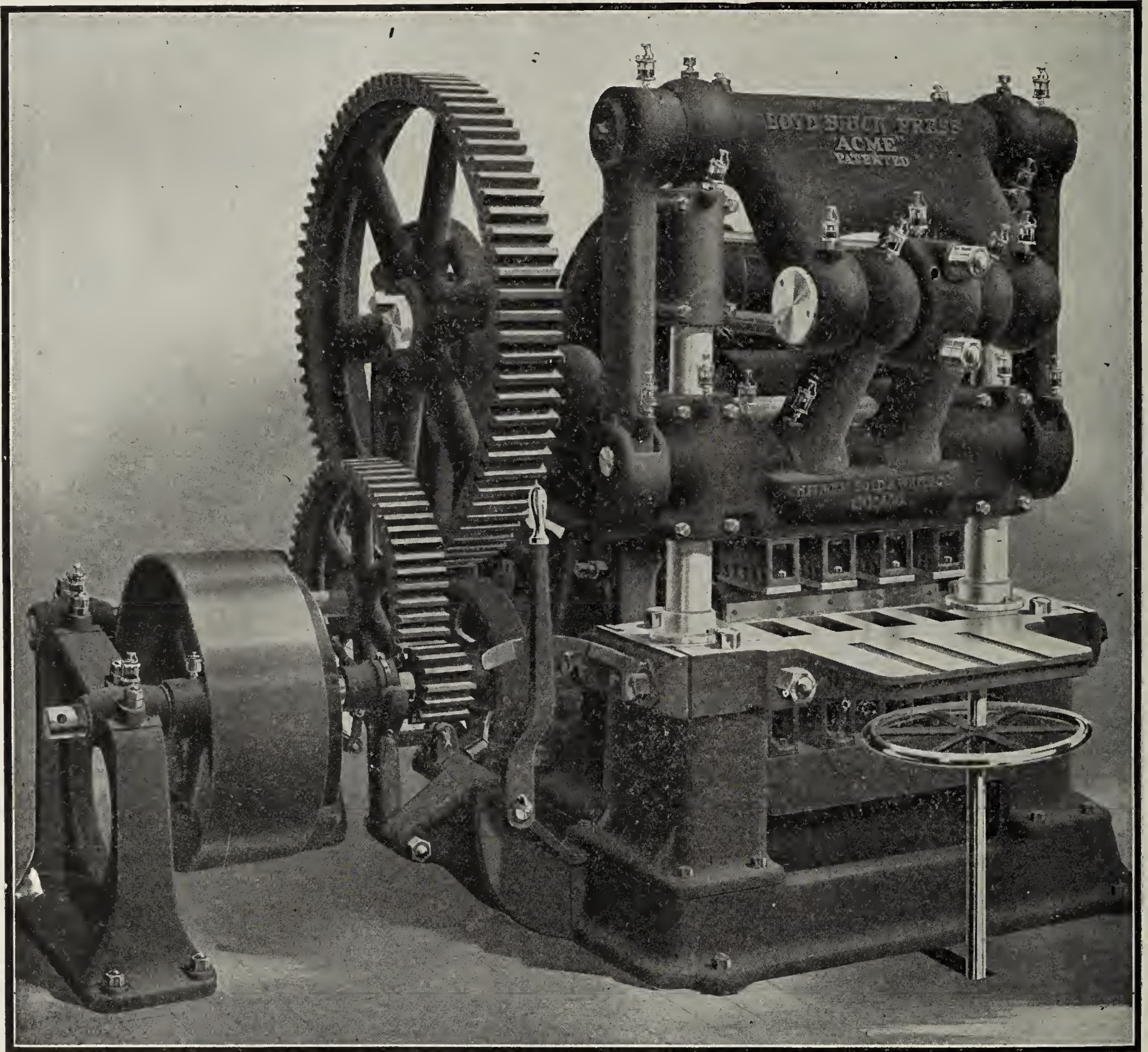


Side View

CLAY RECORD.

THE BOYD BRICK PRESS

FOUR - MOLD "ACME"



We have been building this type of machine for over ten years. It has all improvements to date and embodies all the special features of the original Boyd Press. Detailed perfection, strength, endurance and quality of product have made the Boyd, the Brick Press by which all others are judged.

We will send to any responsible party a *Boyd Brick Press on trial* under the broadest and safest guarantee. We take the machine back if not satisfactory.

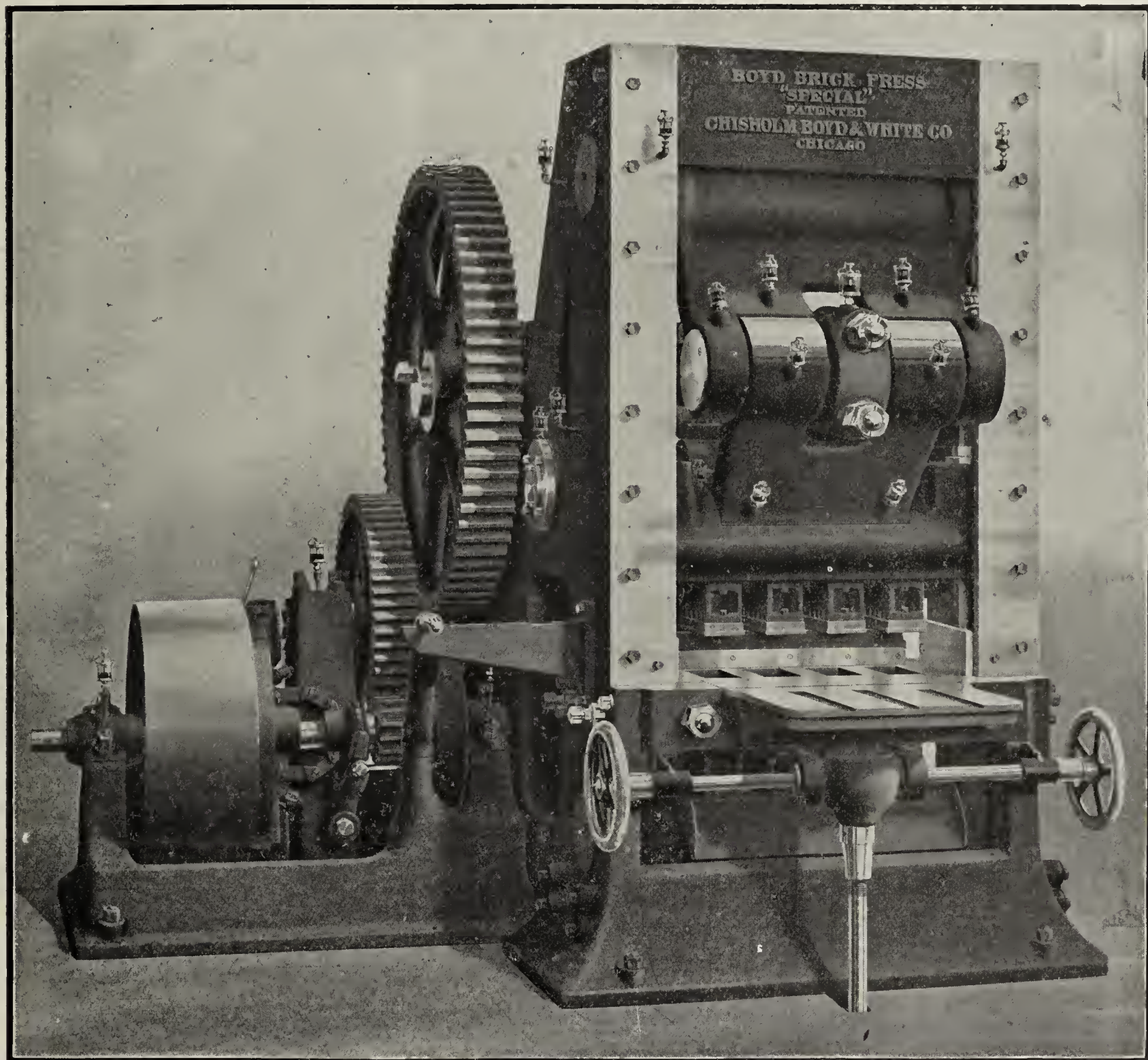
CHISHOLM, BOYD & WHITE CO.

Office and Works: 57th and WALLACE STREETS

CHICAGO, ILLINOIS

The Boyd Brick Press

Built in Two, Four and Six-Mold Sizes



FOUR-MOLD SPECIAL

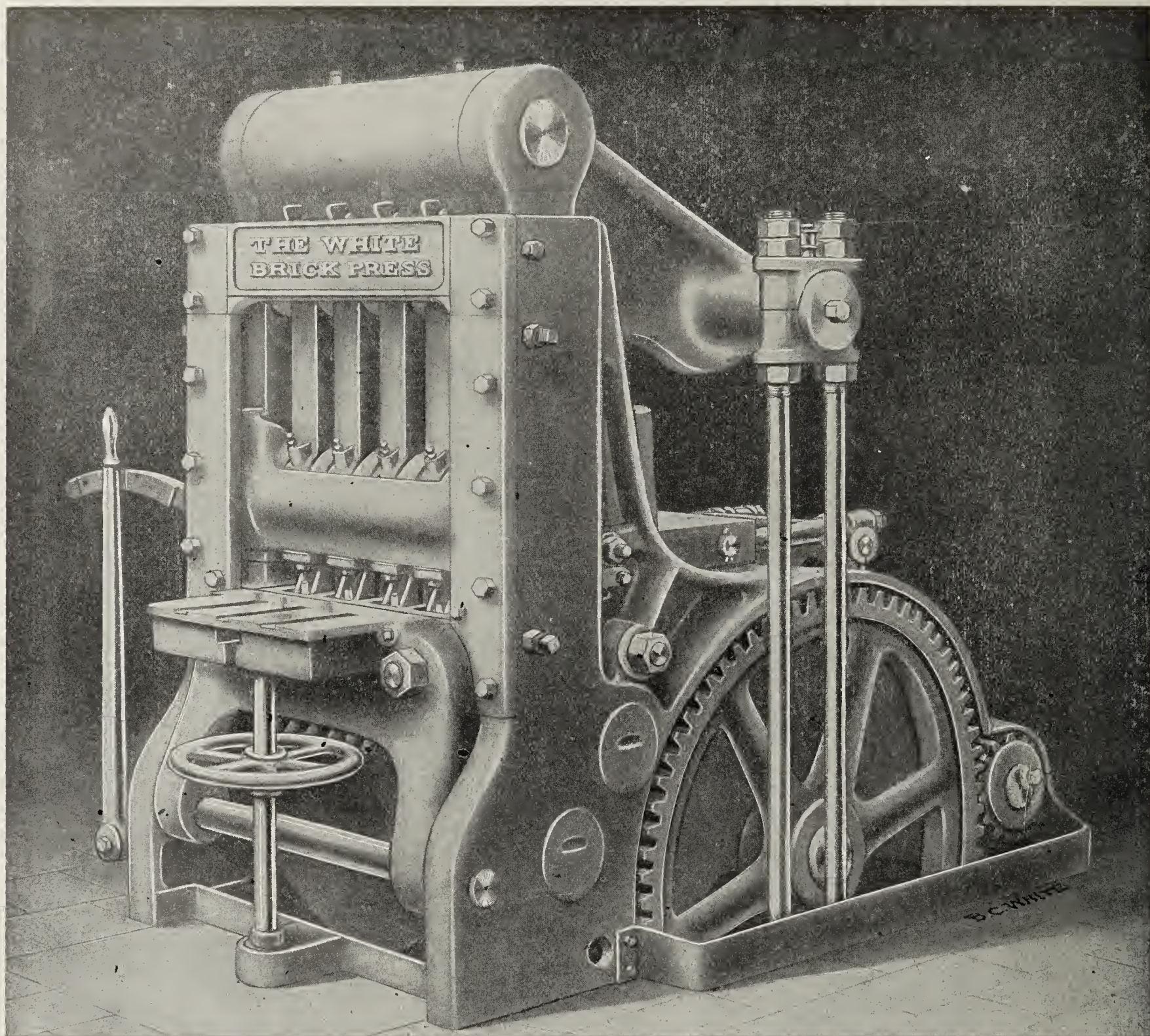
— BRICK PLANTS designed and complete machinery equipment furnished. Machinery and product guaranteed.

More Boyd Presses in use than all other Press Brick Machines combined.

The Boyd Press has great strength and endurance, great pressure and long dwell. Boyd Presses built 18 years ago are still in use and doing good work. Brick Presses that last are the cheapest in the end.

Chisholm, Boyd & White Company

Office and Works: 57th and Wallace Streets, CHICAGO, ILL.



The White Brick Press

FOR MAKING

SAND-LIME BRICK

CURES ALL PRESS TROUBLES. The only Press specially designed for this work and the only Press having *Hinged Mold Table* and *Removable Mold*. Our special Press Catalogue tells all about it.

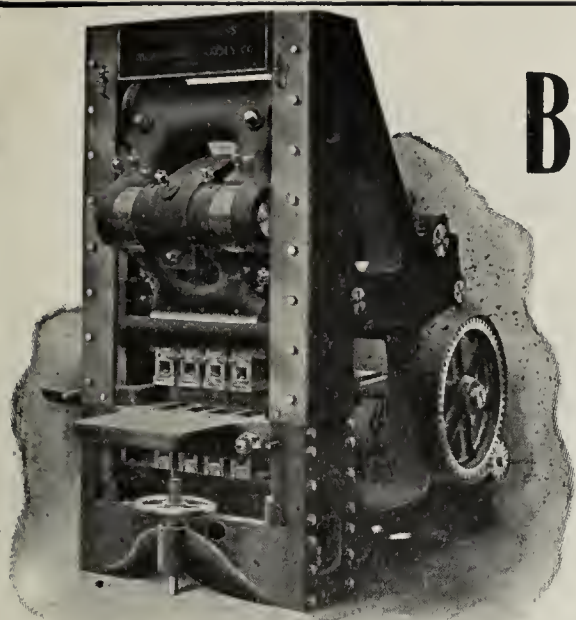
Full Outfits for Sand-Lime Brick Plants. Latest designs in Grinders, Mixers and Dryers. Plants installed complete under fullest possible guarantees, subject to acceptance after first 100,000 brick are made.

Send for Illustrated Booklet

American Sand-Lime Brick Company
Great Northern Building, Chicago

BERG BRICK PRESS

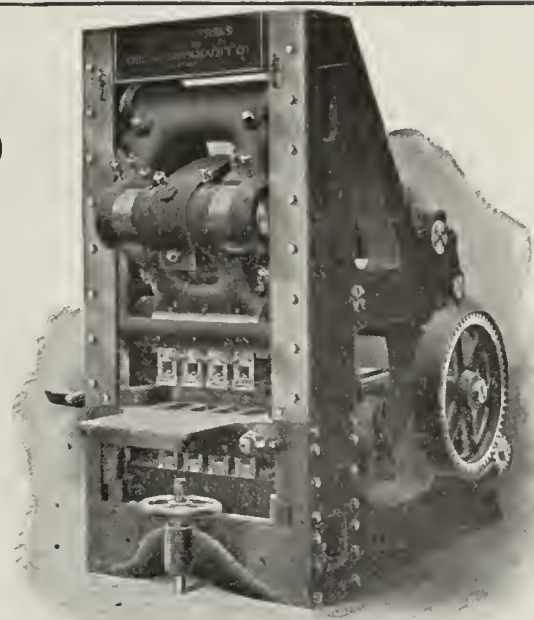
The highest development of the Art of Brickmaking Machinery so pronounced by the United States Government.



The BERG for the highest grade of pressed brick of shale or clay. It makes all kinds of shapes and sizes of brick. Changes from one shape to another can be made in less than an hour's time.

First-Class Workmanship. Cut Gearing. Fully Warranted.

The BERG makes the **best** sand-lime brick and cheapest because it is the strongest machine and gives the highest pressure. Thirty-five sand-lime plants in United States use the BERG Brick Press **SUCCESSFULLY.**



The BERG **MAKES** the highest grade of fire brick. Can make all kinds of shapes desired for fire-brick purposes.

Three distinct pressures make the brick evenly pressed all through. No granulated centers of the brick.

The BERG is the **best** for sand and cement because of its strong pressure. Uses less ce-

ment, makes cheaper brick.

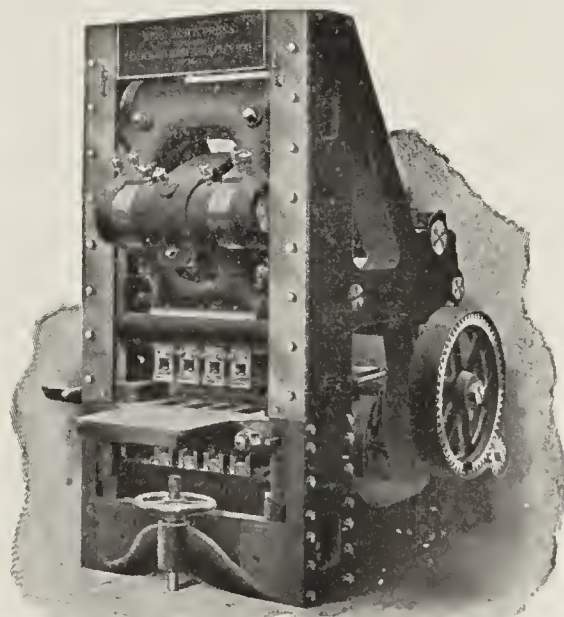
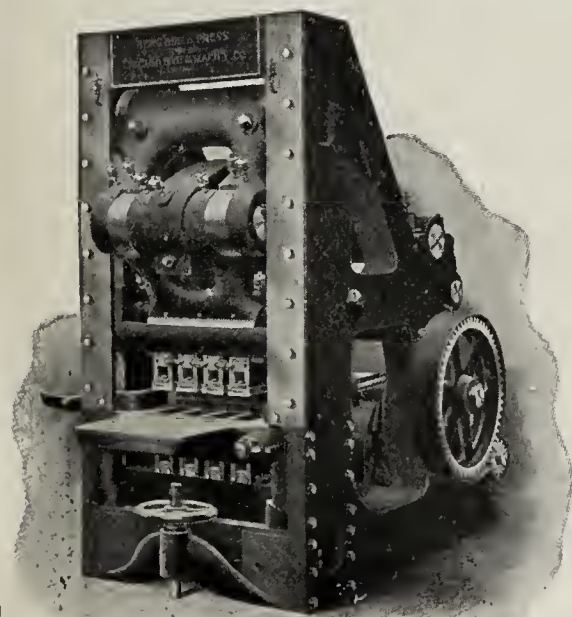
The 1905 Berg Press

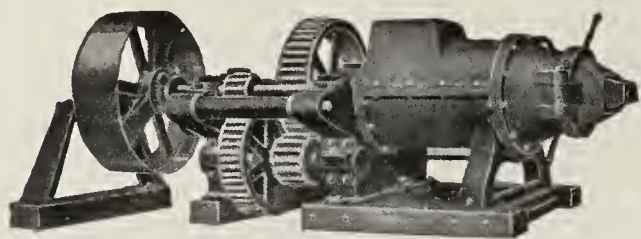
Many other steps further forward in improvement and highest grade of material and workmanship, also cut gearing. Fully guaranteed as to its success. Manufactured by its inventor in Toronto, Canada, exclusively. Plans and specifications on the different kinds of plants furnished, also all equipments.

For prices and full particulars, address

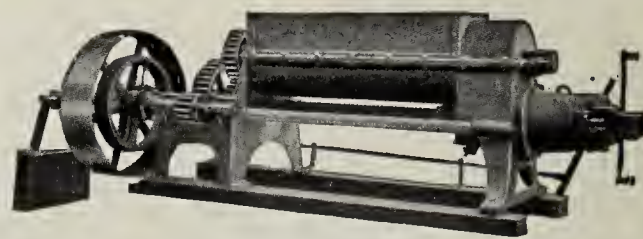
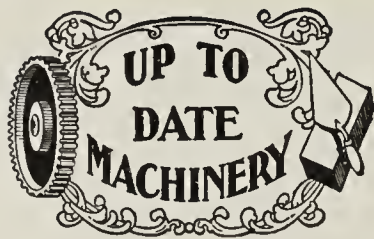
A. BERG & SONS

OFFICE: MANNING CHAMBERS
TORONTO, ONT., CANADA





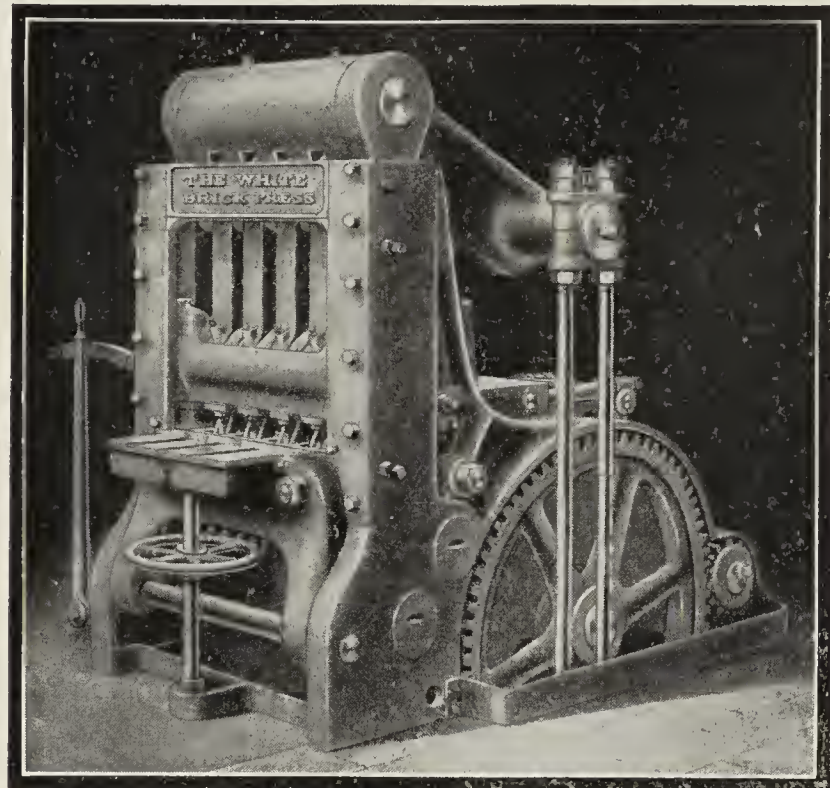
Auger Machine



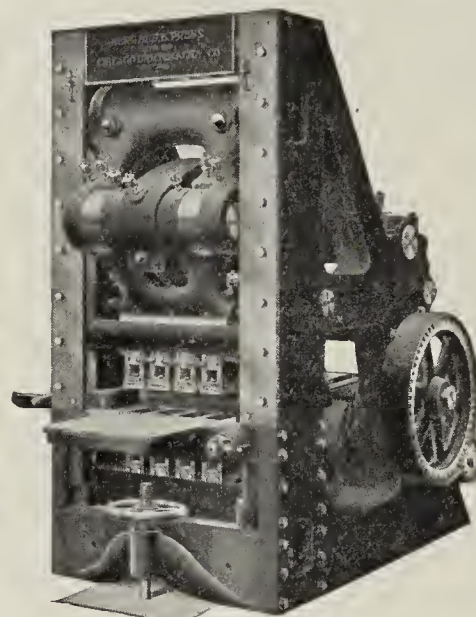
Combination Machine

UP=TO=DATE MACHINERY

For Making all Kinds of Brick—
**Dry Pressed, Wire Cut,
Sand Moulded**



New White Press



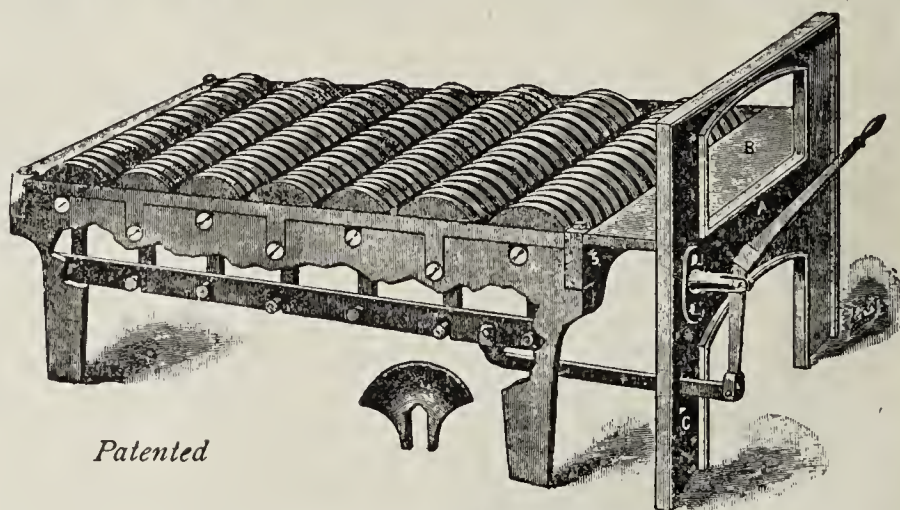
New Model Berg Press

**Full
Line of
Brickyard
Specialties
and
Supplies**

In addition to our well known BERG PRESS, we are now bringing out our new WHITE PRESS for clay-brick work. It is especially recommended for difficult and refractory clay. By far the most powerful press built. Removable molds, changed in SEVEN minutes. Special catalogue and full particulars on application.

Something New for 1907

Rocking and Dumping Grates for Kilns. Save coal, save labor, and do away with checked brick. Send for "Lecture on Combustion," by His Satanic Majesty.



Patented

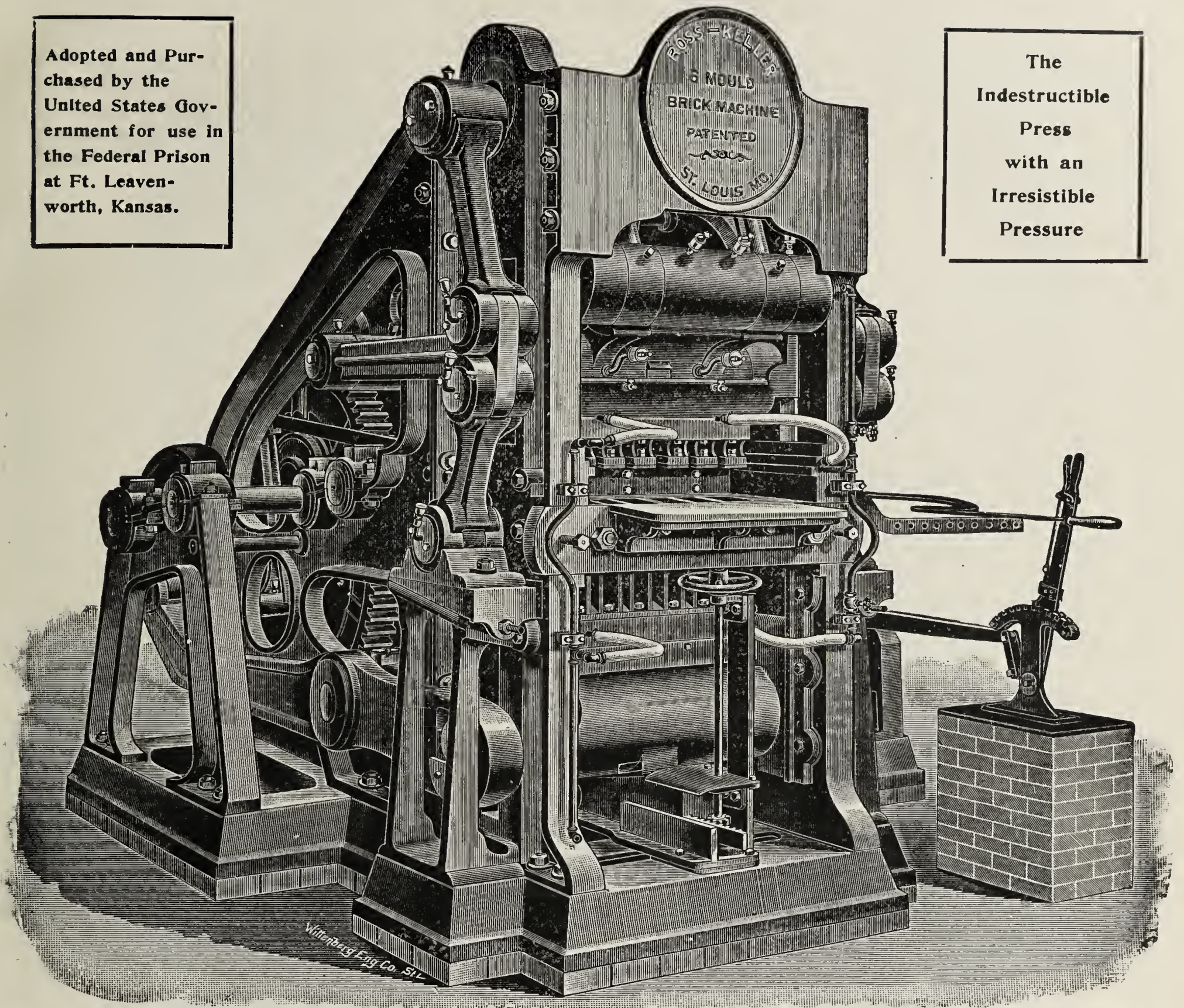
U. S. SELF CLEANING GRATE
In position ready for use. Part of frame cut away to show connection below.

Chicago Brick Machinery Co.

1308 Great Northern Bldg.

Adopted and Purchased by the United States Government for use in the Federal Prison at Ft. Leavenworth, Kansas.

The Indestructible Press with an Irresistible Pressure



WE BUILD
Sand-Lime Brick Plants, Shale and Clay Brick Plants
ARE ALSO SOLE MANUFACTURERS OF THE
Ross-Keller Triple Pressure Brick Press

the strongest and most efficient Brick Machine made, and the only Press that gives three distinct pressures to the brick

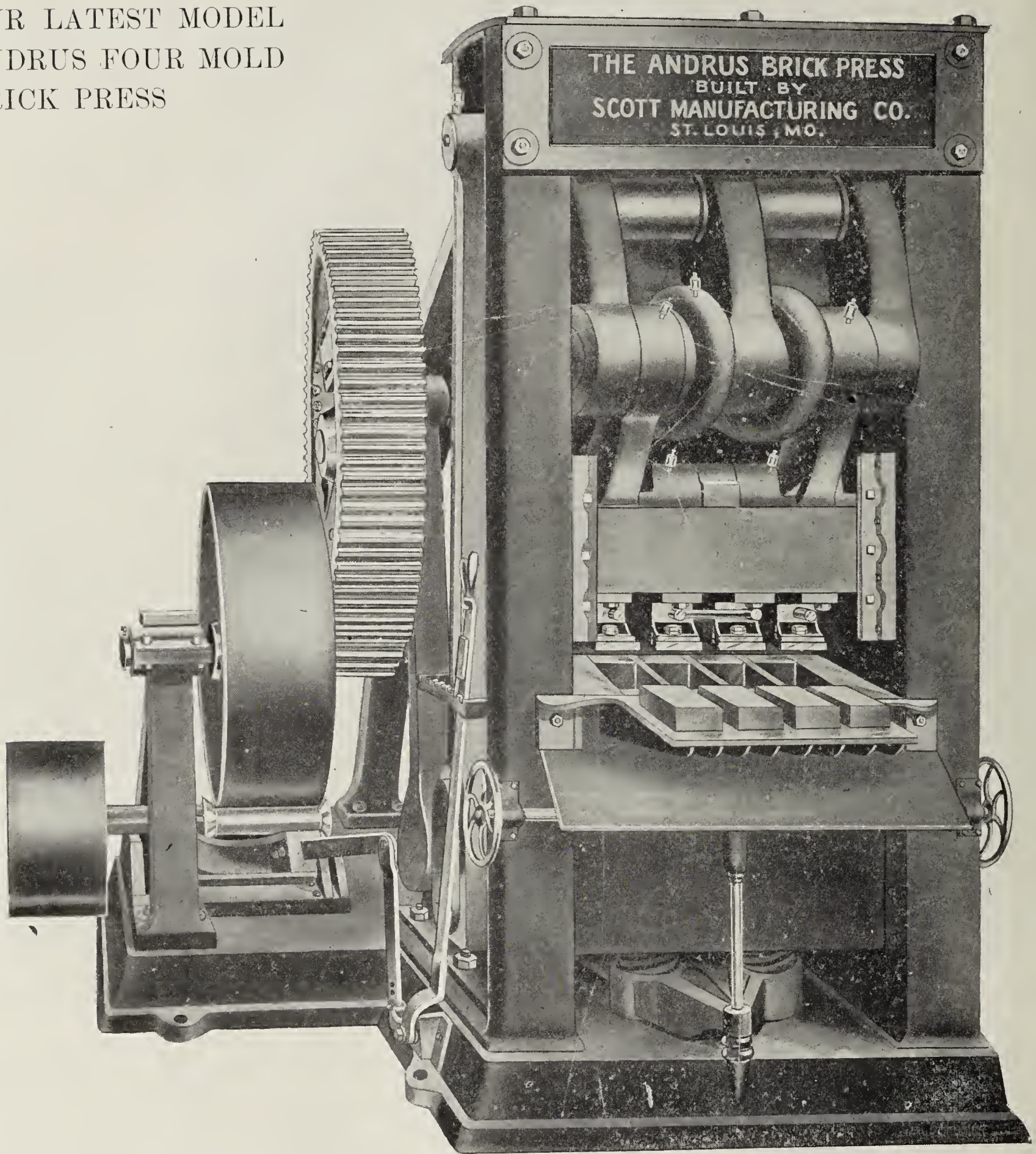
ROSS-KELLER TRIPLE PRESSURE BRICK MACHINE CO.

OFFICES FULLERTON BUILDING,

ST. LOUIS, MO.

CLAY RECORD.

OUR LATEST MODEL
ANDRUS FOUR MOLD
BRICK PRESS



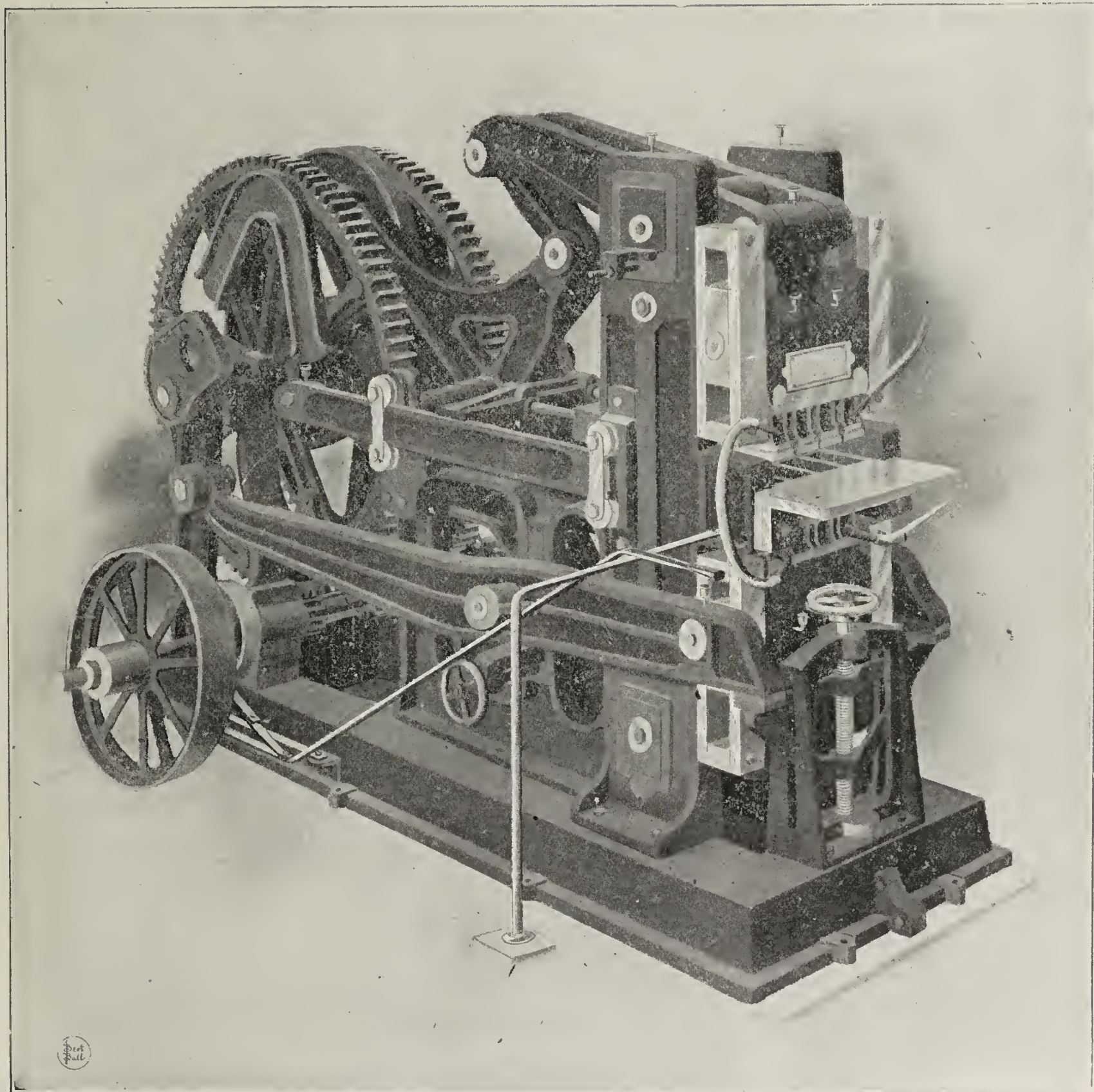
THIS IS THE "PRESS THAT SCOTT BUILDS"

Write for prices on
PRESSES
DRY PANS
PULVERIZERS
MIXERS
TRUCKS and BARROWS

Scott Manufacturing Company
602 Commonwealth Trust Bldg.
ST. LOUIS

The Fernholtz Brick Press

Weights SIXTEEN Tons, Built for Heavy Work

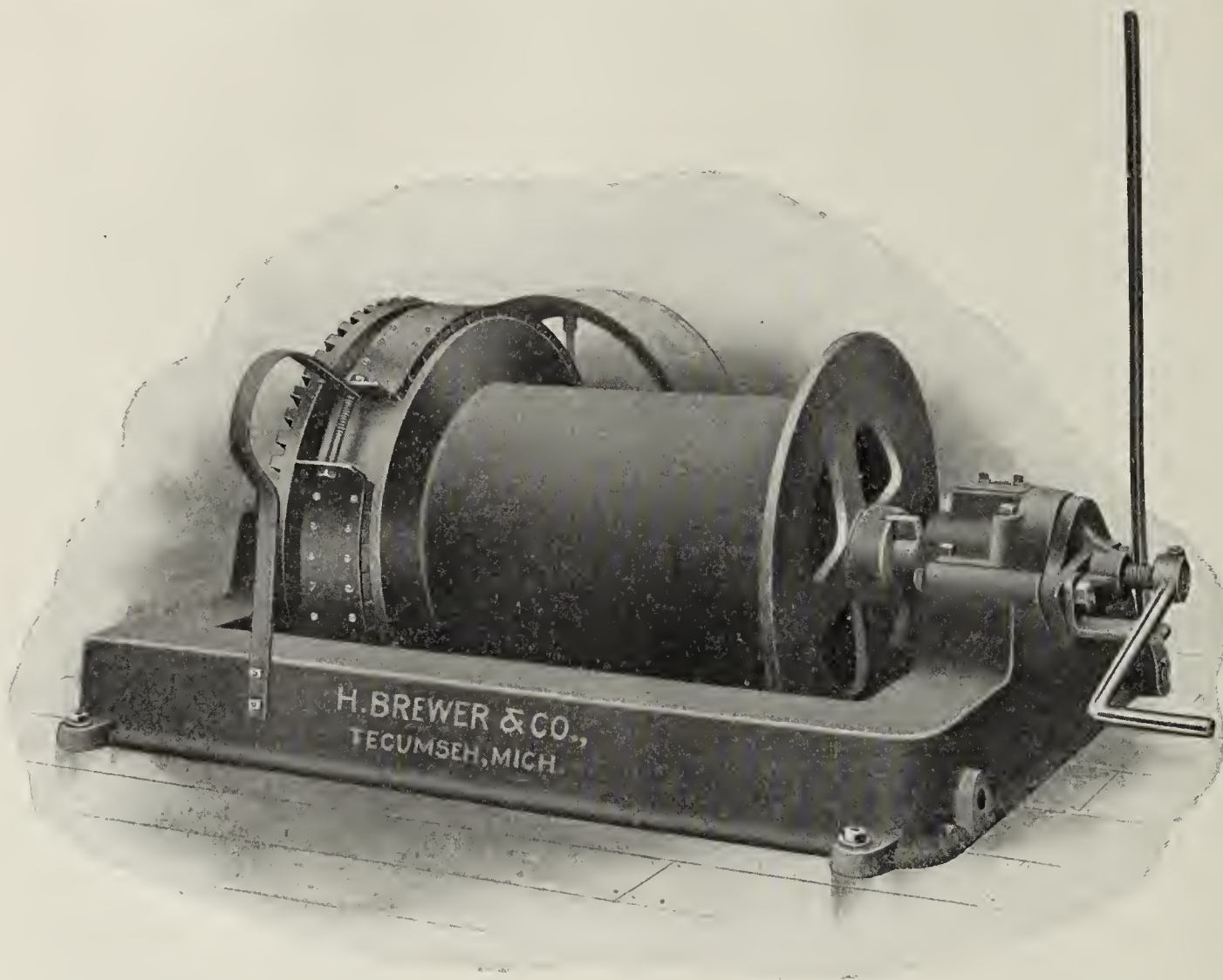


Holds Pressure on Material Longer and Presses it Harder with Less Power than any other Dry Press

The Fernholtz Brick Machinery Company
1446 Old Manchester Road, ST. LOUIS, MO.

HOISTS

WE have a line of Hoists from which you can select just what your work requires. We have both spur and bevel geared patterns, large and small sizes, and every one of them a bang-up good machine; built just the way it ought to be built.



THE BREWER NO. 28

Is a large heavy, bevel geared Hoist suitable for the largest plants. It weighs 3000 pounds. Drum 20 in. diameter, 28 in. between flanges. Flanges 30 in. diameter. Brake band 3 in. wide. Bearings self oiling. Frame cast in one piece. Drum, friction head and brake wheel cast together in one piece.

Our complete catalogue illustrates and describes our entire line of high grade Clay Working Machines. Mailed upon request.

If Marked



Its Good

H. Brewer & Co.

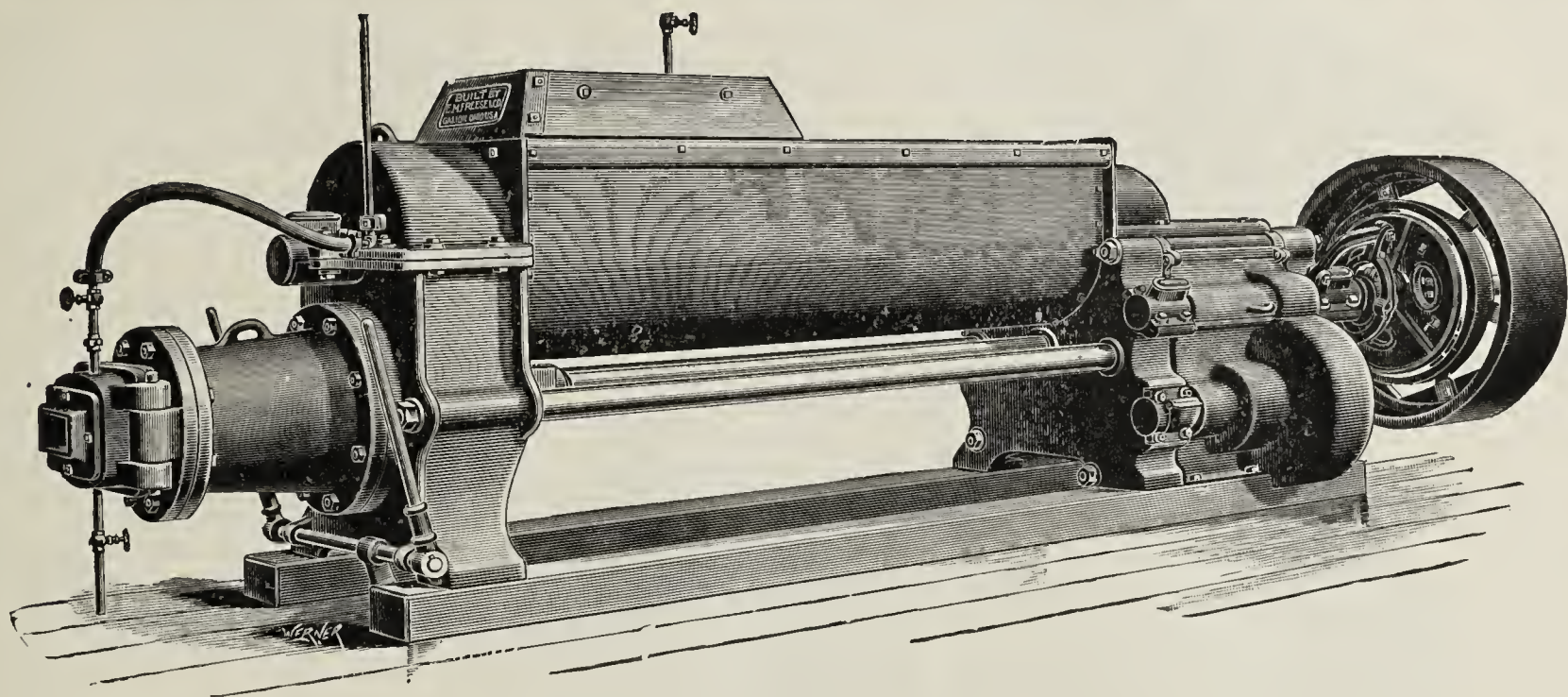
TECUMSEH, MICHIGAN

If Marked



Its Good

UNION BRICK MACHINES



We build these Machines in five sizes. Capacities to 10,000 brick per hour.

Several hundred are in everyday use. They do first-class work and are convenient, economical and durable. This can be verified by investigation.

We also build Brick Machines with separate Pug Mill.

Don't forget our Automatic Cutters. They give satisfaction.

State your requirements and let us furnish particulars.

E. M. FREESE & CO.

GALION

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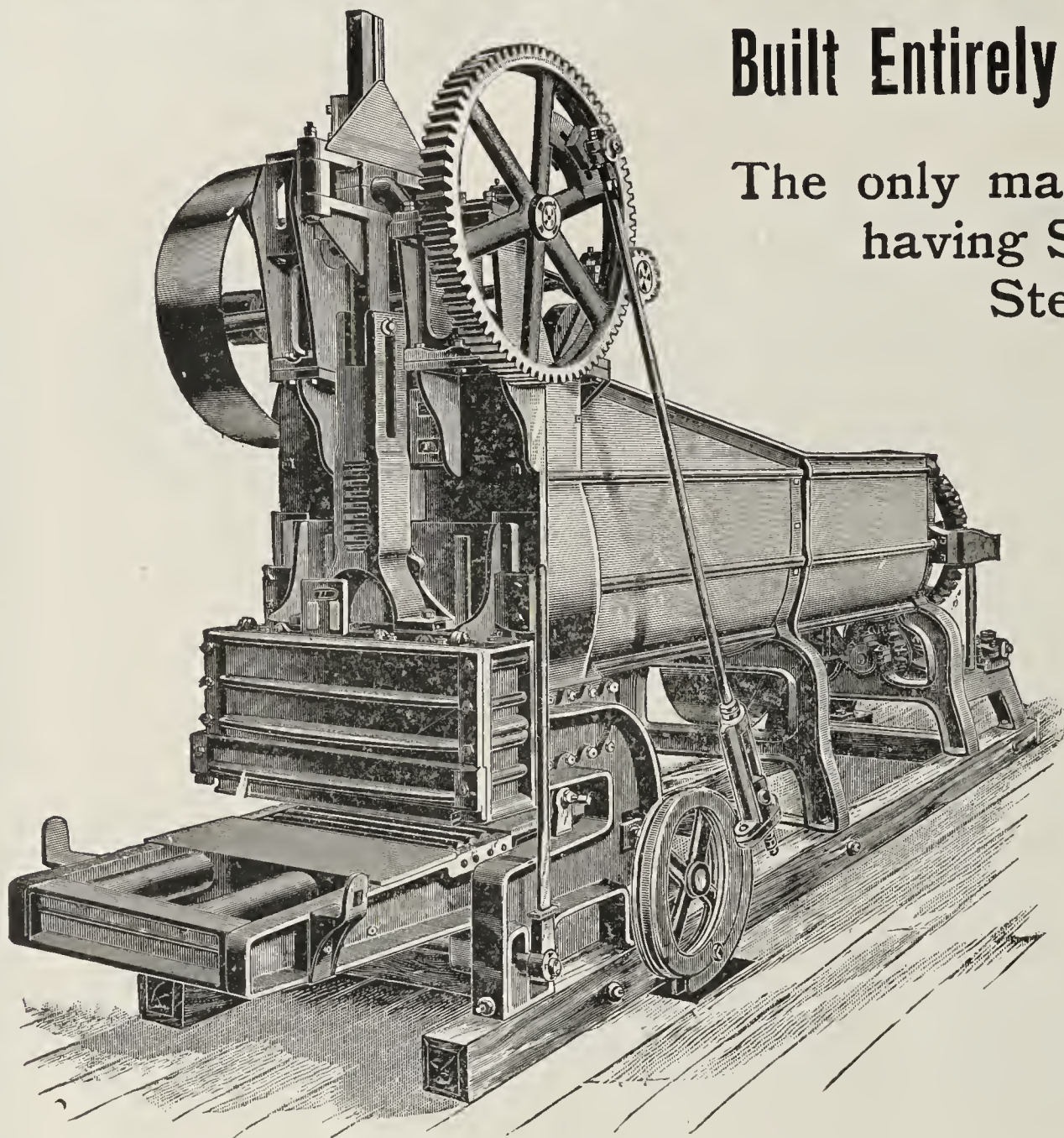
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OHIO

THE POTTS HORIZONTAL BRICK MACHINE

Built Entirely of Iron and Steel.

The only machine of this class
having Steel Gear and
Steel Shaft.

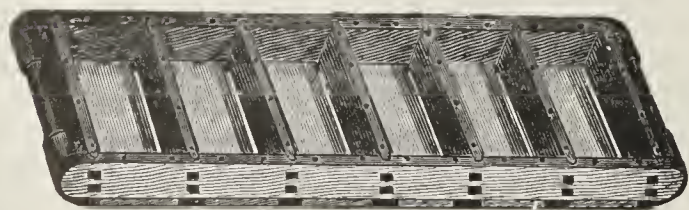


Built of the Best
Material by the Best
Workmen.

Simple, Strong and
Durable.

No extra pug mill required to enable working the clay direct from the bank. Its great strength enables working the clay as stiff as practicable, insuring brick which will be STRAIGHT and SQUARE.

THE LEADER OF ALL SAND MOULD MACHINES.



BRICK MOULDS A SPECIALTY
QUALITY IS OUR AIM.

We manufacture a complete line of Brick Yard Supplies. Write for prices.

C. & A. POTTS & CO., Indianapolis, Ind.

BRICK DRYERS

The largest and best. The drying done upon an entirely new principle. Brick made today. Set in Kiln tomorrow. Thoroughly dry. Will dry the most tender clay with no loss from cracking.

It has **No cars**

No transfer cars

No rail

No ties

No fans

No extra engine

No high or expensive stack

The best dryer on the market. Manufactured by

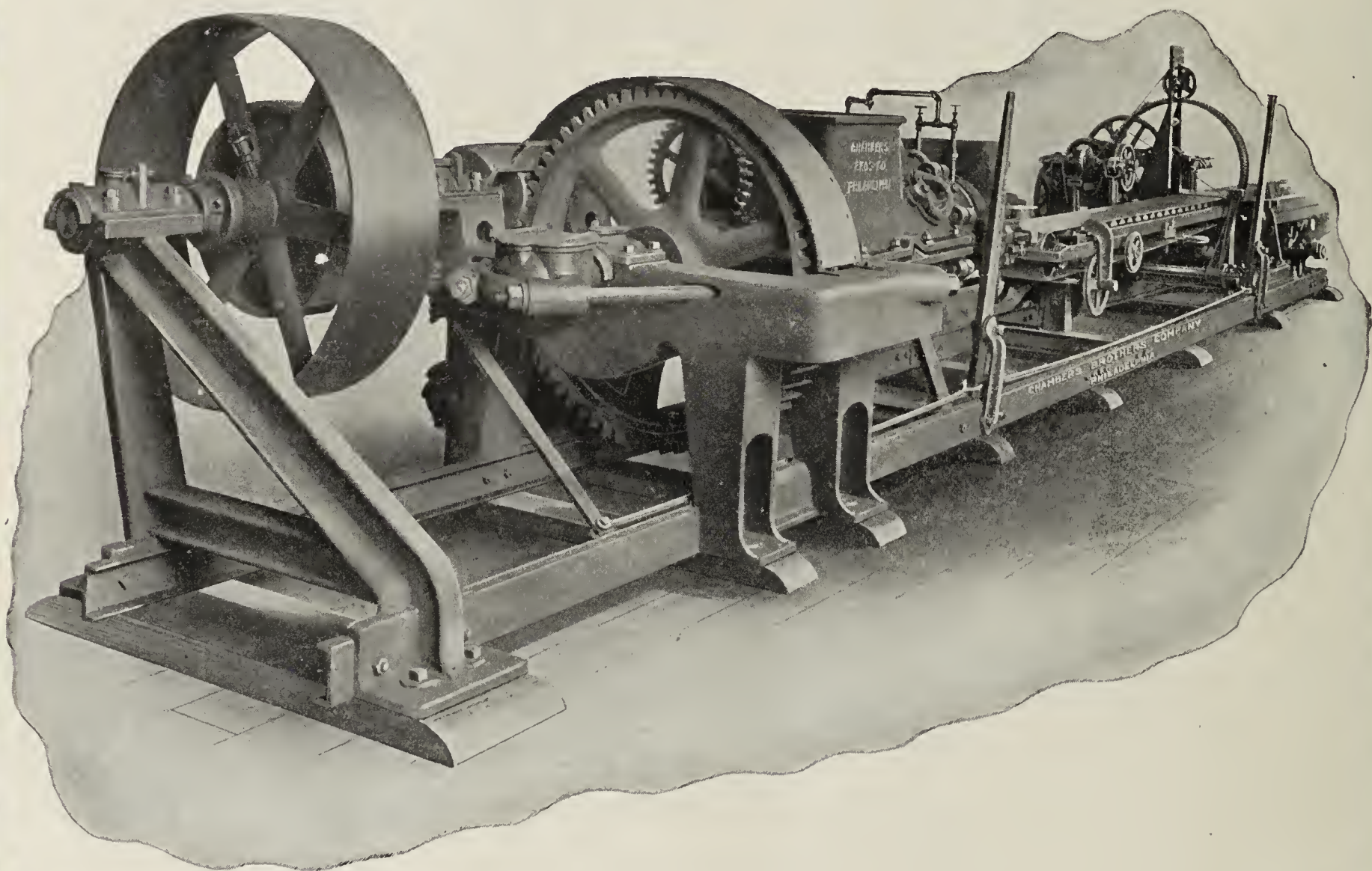
C. & A. POTTS & CO.

INDIANAPOLIS, IND.

THE NO. 10

Chambers Brick Machine

With No. 6 Automatic Side Cutter



¶ This is a new machine and embodies a number of novel and interesting features. The No. 6 Side Cutter has been tested to as many as 110 bricks per minute and is confidently guaranteed for a capacity of 40,000 bricks daily. It is a single wire rotary cutter with a down shear cut, cutting but one brick at a time and cutting them absolutely square and smooth. Provision is made for the escape of stones, should they come in the path of the cutting wire, and the flexibility of the wire does not effect the squareness of the cut.

¶ Note the new gear frame and large diameter heavy gear of broad face. Observe how the end thrust is provided for, as well as the position of driving shaft and clutch pulley. No trouble to get at the journal bearings when necessary to rebabbit. Clutch pulley 44 inches in diameter by 12 inch face. Driving shaft 3 7-16 inches diameter. For hard work and a daily capacity of 20,000 to 40,000 bricks this machine is in a class of its own.

Chambers Brothers Company

Fifty-Second and Media Sts.
PHILADELPHIA, PA.

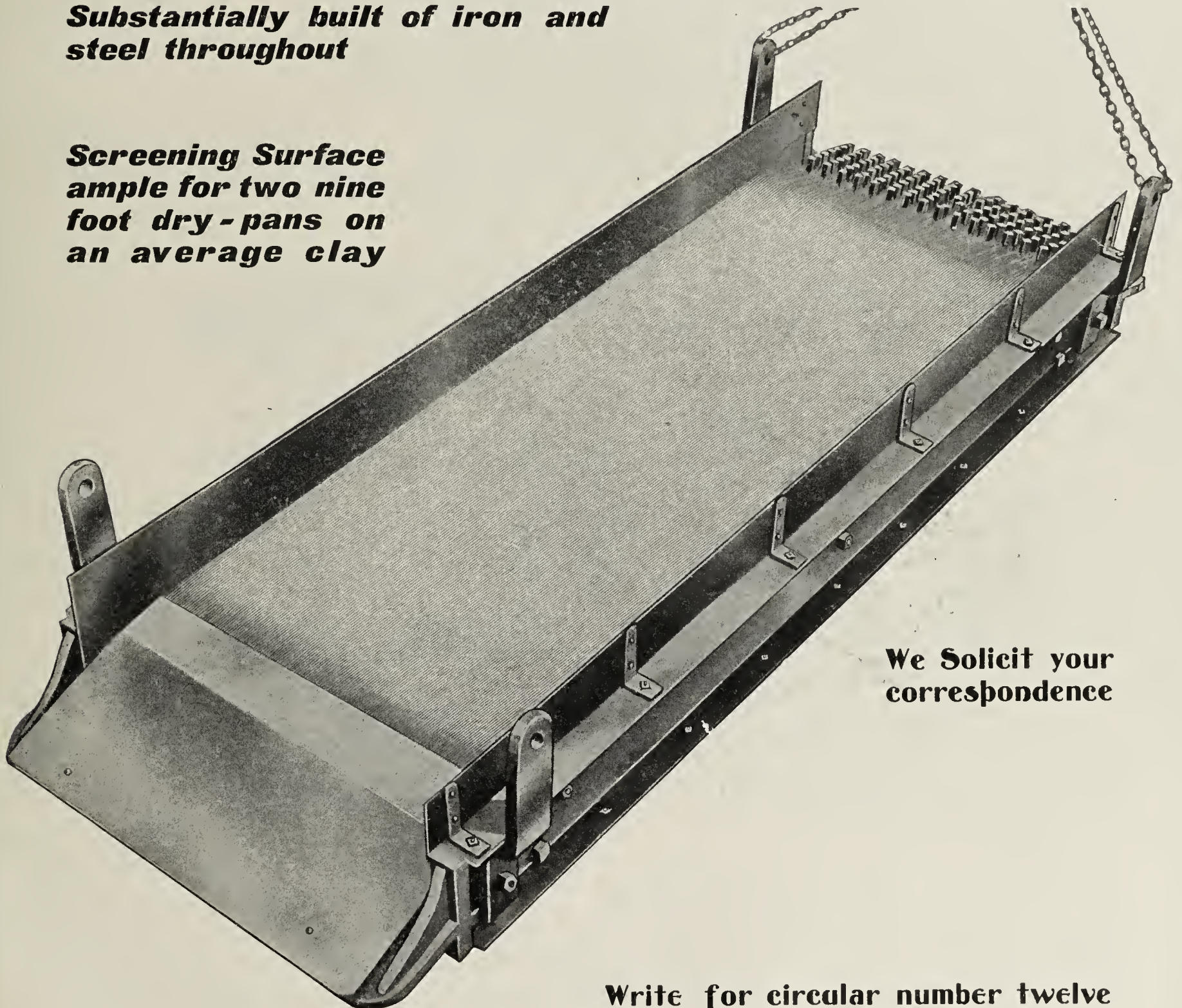
59 West Jackson Boulevard
CHICAGO, ILL.

Modern Clay-Working Machinery

Complete Stiff Mud Equipment

Substantially built of iron and steel throughout

Screening Surface ample for two nine foot dry-pans on an average clay



**We Solicit your
correspondence**

Write for circular number twelve

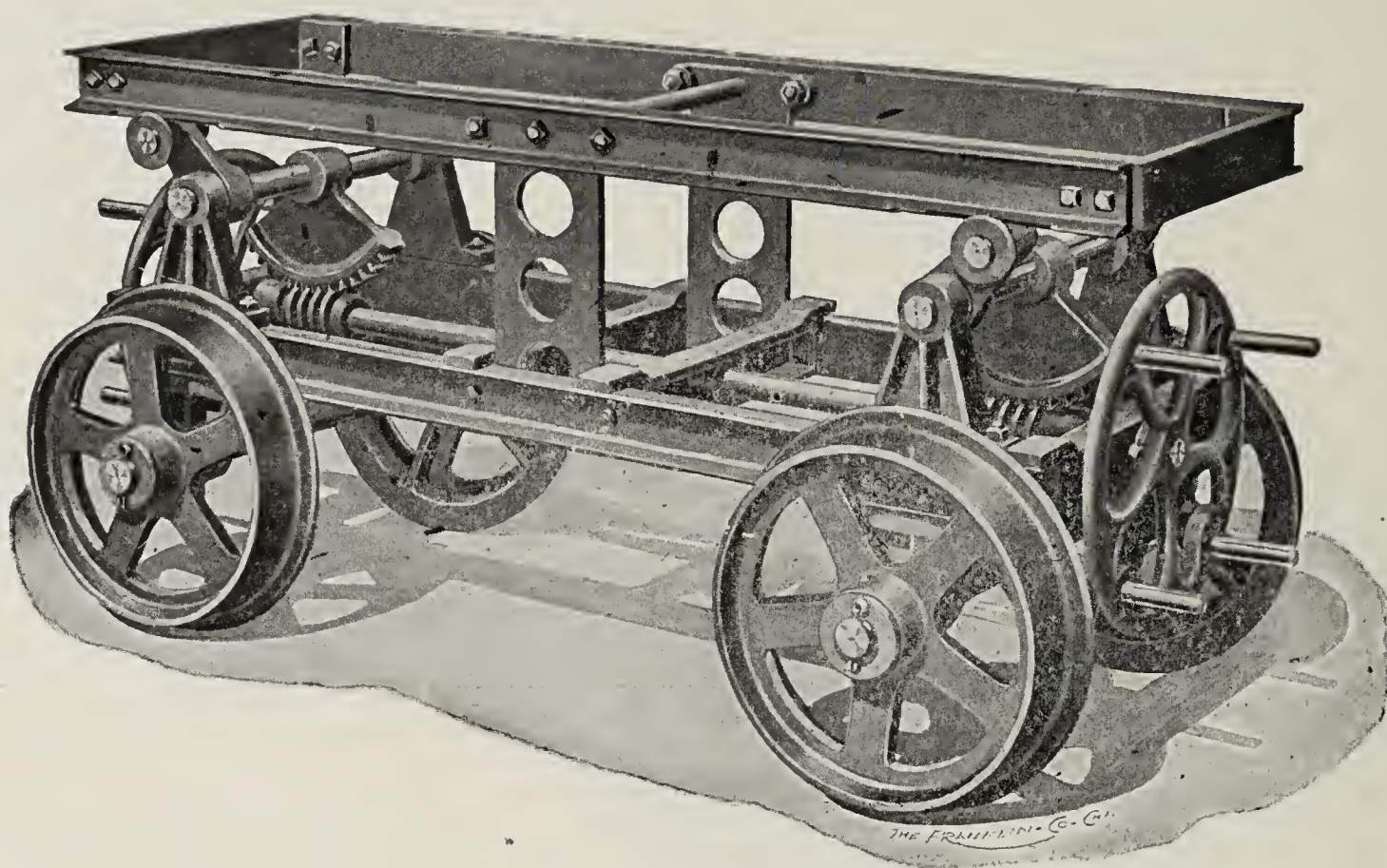
THE BONNOT COMPANY

CANTON, OHIO

THE GUILDER

ELEVATING and LOWERING BRICK CAR

FOR OPEN AIR SYSTEM OF DRYING



Strong and serviceable. Easy to handle. Operated from either end. All iron and steel. Raised and lowered by worm gear and segment. The most perfect car of its kind made. We will furnish the **Guilder Elevating and Lowering Car** with the necessary transfer cars and turn table at a reasonable price and send you all the plans for an open air system of drying without additional cost.

Write us in regard to this car and also let us tell you all about the "**PREMIER**" line of Clay-Working Machinery.

The J. D. Fate Company
PLYMOUTH, OHIO

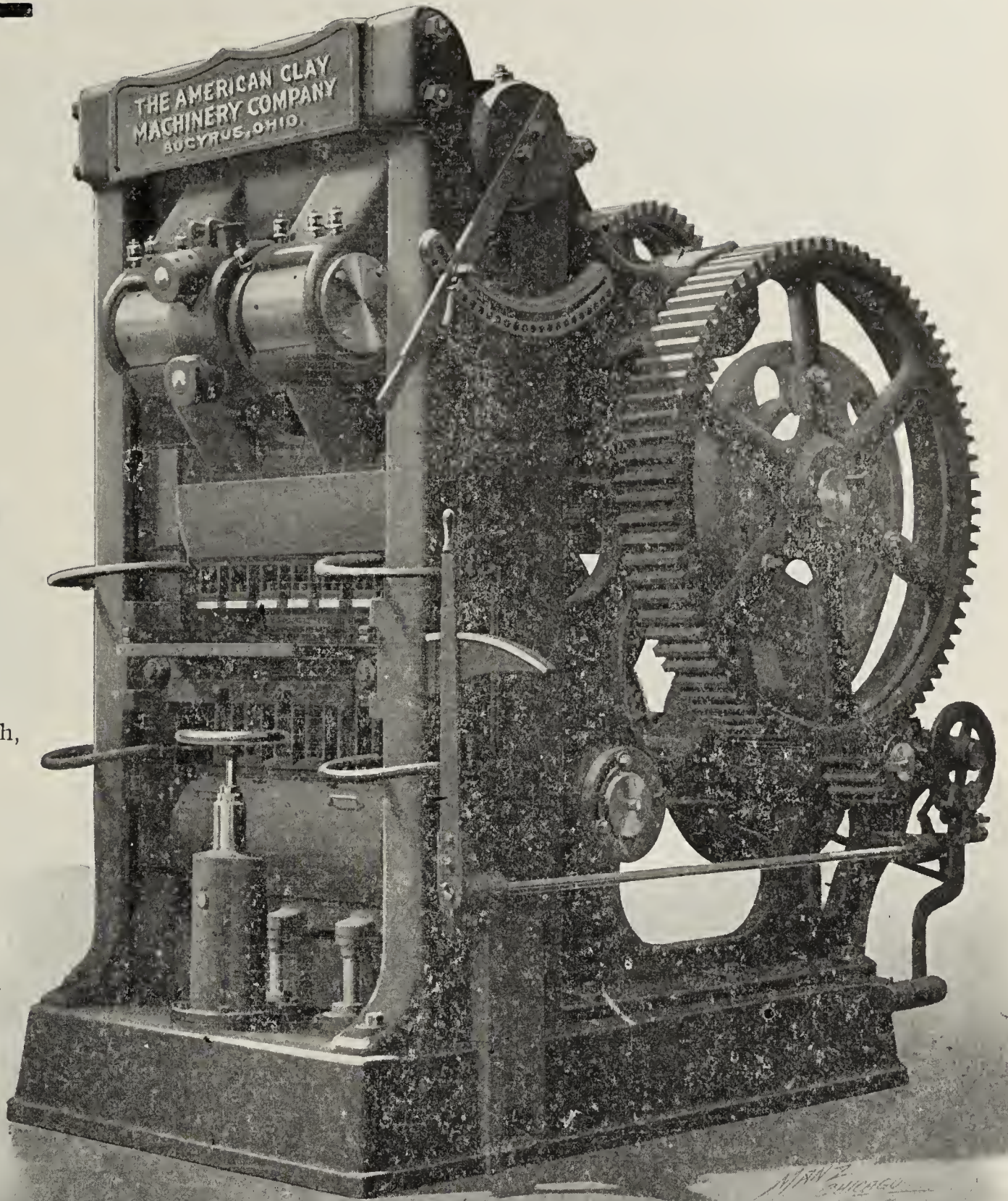
SIX MOLD DRY PRESS

This is the heaviest Press of the kind on the market. It has great weight, great strength, rigidity and accuracy. The massive side frames, securely tied together, make a frame in every way ample. The shafting is of forged steel, made in our own forging shops. The bearings are long and carefully made. The gearing is heavy and strong. The feed is adjustable. The pressure mechanism is designed to give a long dwelling pressure. There is no press of better quality or that will produce more or better brick.

We will be pleased to furnish full description upon request.

We also build a complete line of machinery and appliances for manufacturing every class of Clay Products by all processes.

Being the largest Manufacturers of Clay Working Machinery in the World we are better equipped than others to supply your every need, in every line of Clay Manufacturing.

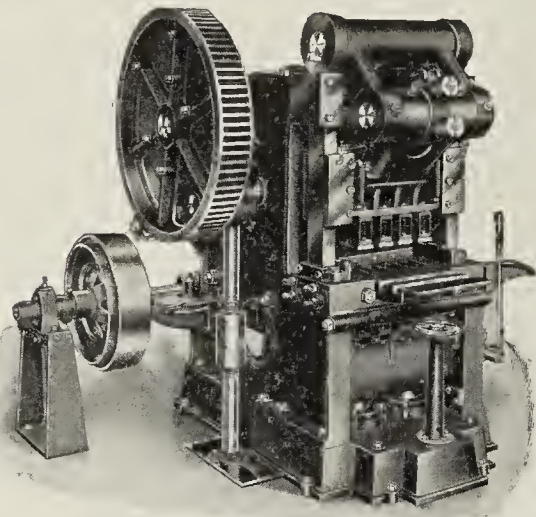


NO. 515 SIX-MOLD DRY PRESS BRICK MACHINE

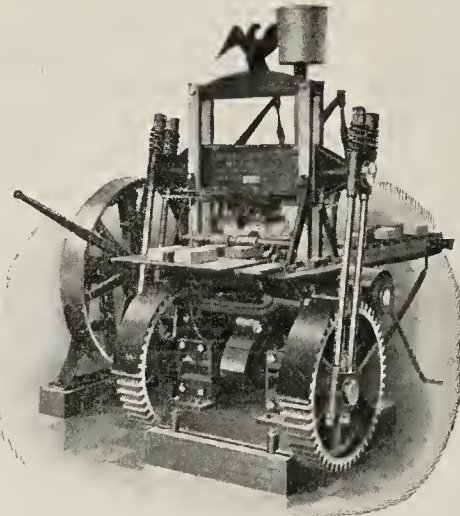


The American Clay Machinery Co.
Bucyrus, Ohio

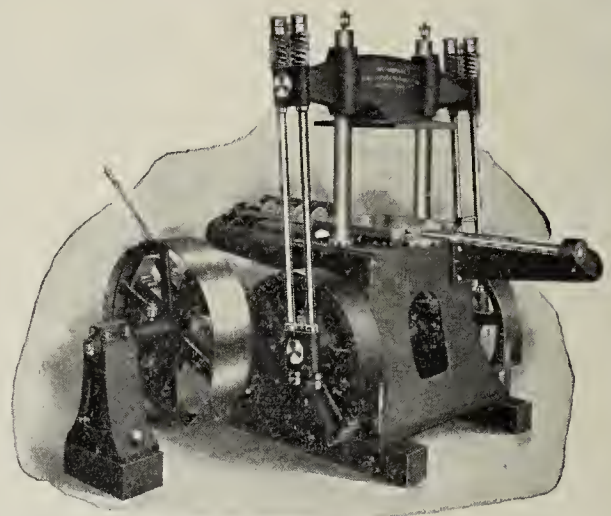
THE AMERICAN CLAY *MACHINERY COMPANY* BUCYRUS OHIO, U.S.A.



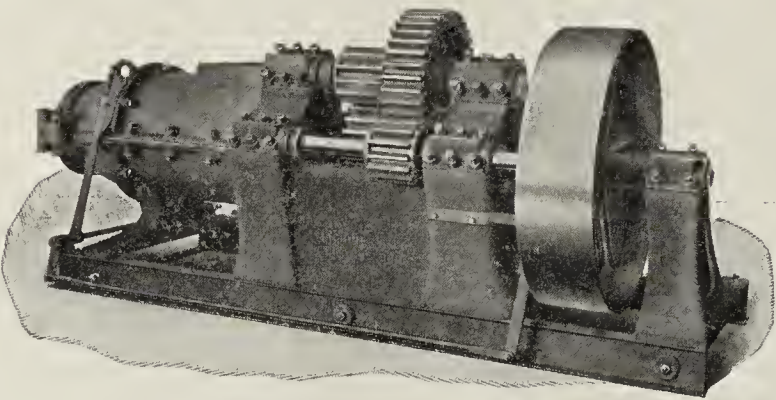
Model "B" Dry Press



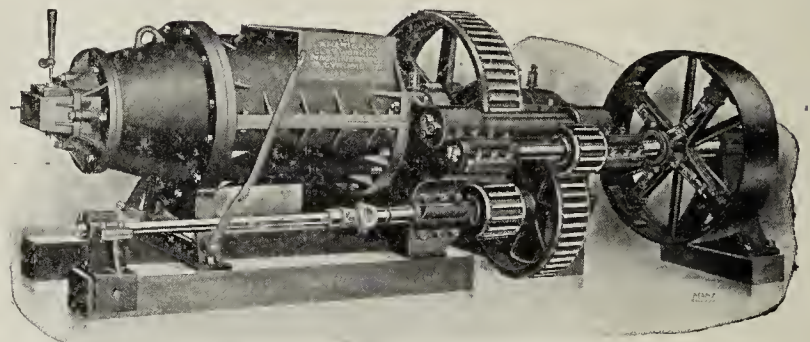
Eagle Reppress



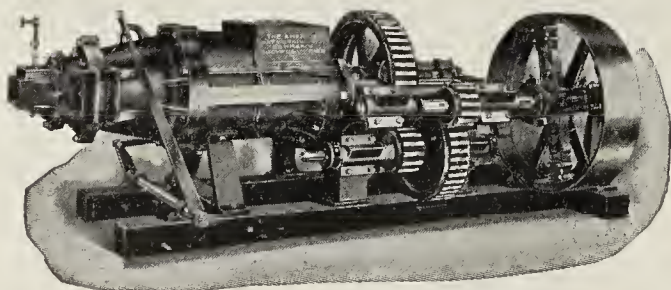
Roofing Tile Press



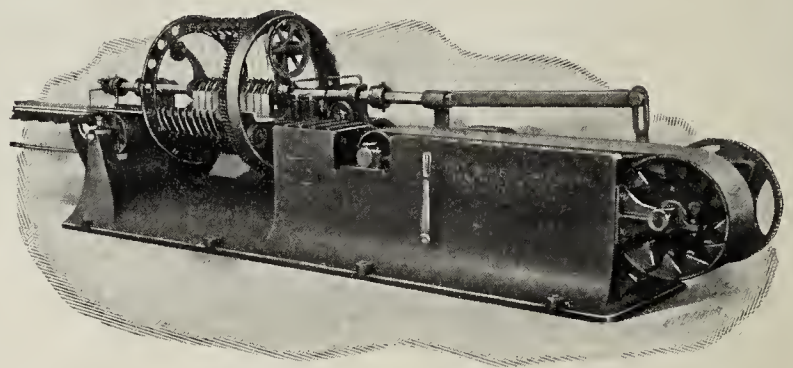
No. 65 Auger Brick Machine



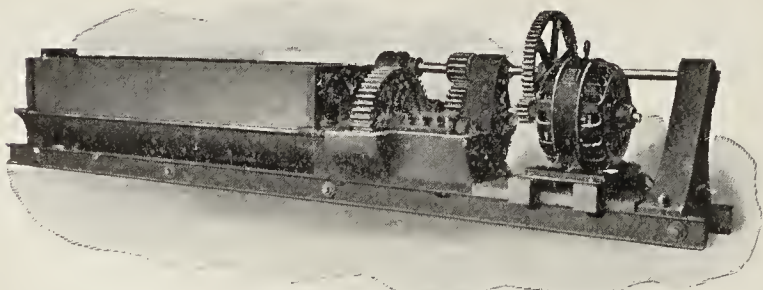
Special Giant Brick Machine



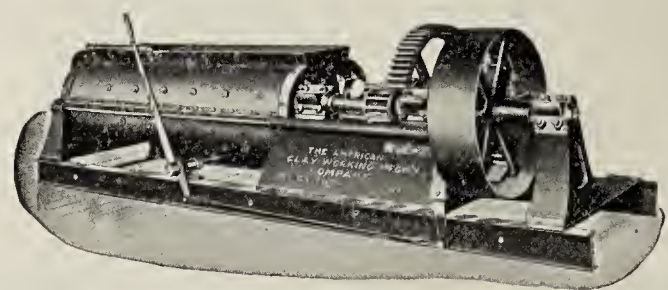
No. 2 Giant Brick Machine



No. 83 Automatic Cutter



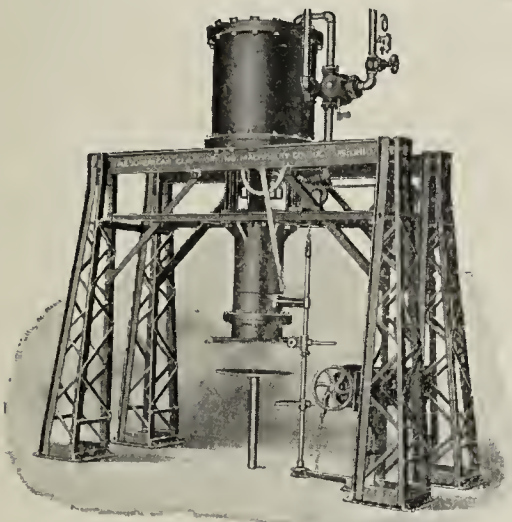
No. 51 Electrical Driven Pug Mill



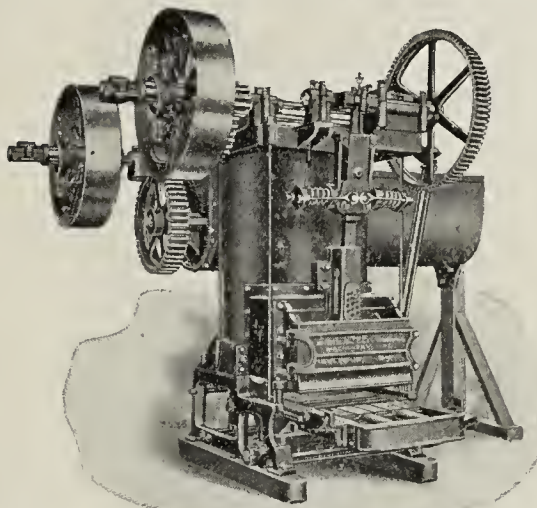
No. 38 Double Shaft Pug Mill

We Build Every Machine and Every Appliance Needed for the Manufacture of Every Class of Clay Products by Every Process

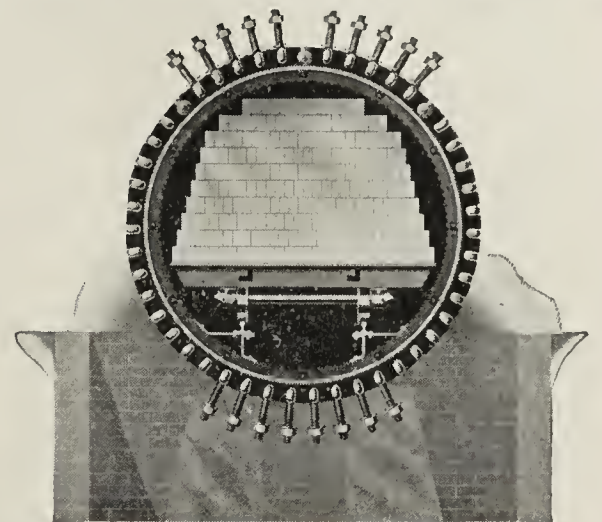
THE AMERICAN CLAY *MACHINERY COMPANY* BUCYRUS OHIO, U.S.A.



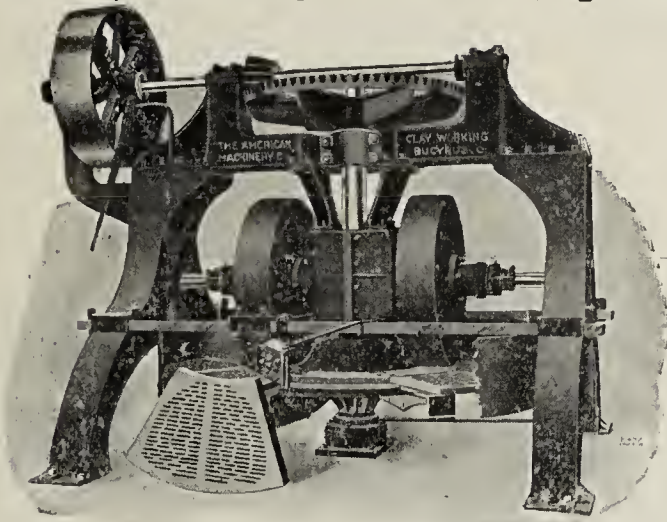
Sewer Pipe Machinery



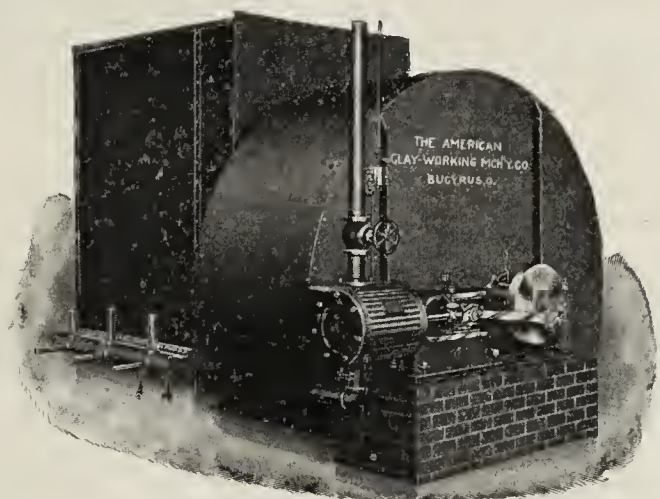
Upright Stock Brick Machine



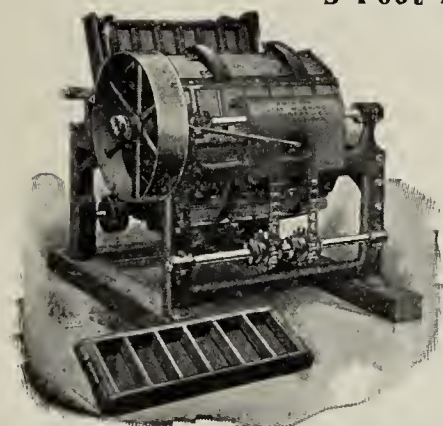
Sand-Lime Brick Machinery



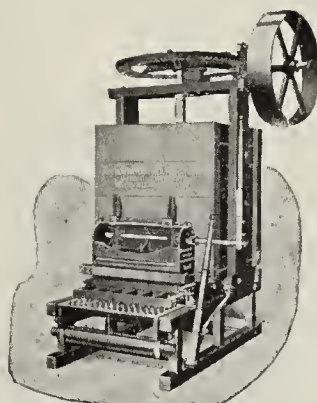
9 Foot Dry Pan



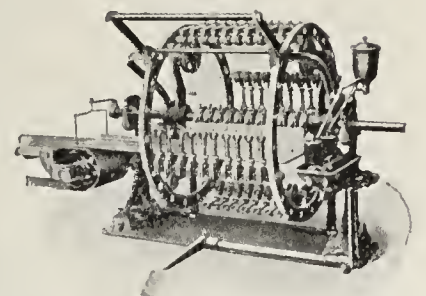
Blower Dryer Apparatus



Mold Sander



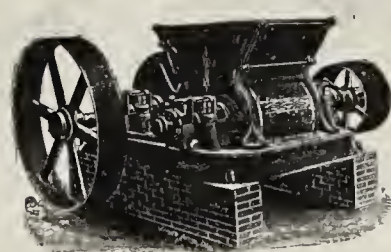
H. P. Brick Machine



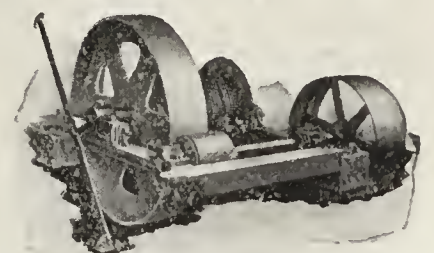
No. 62 Hand Power Cutter



Dry Cars

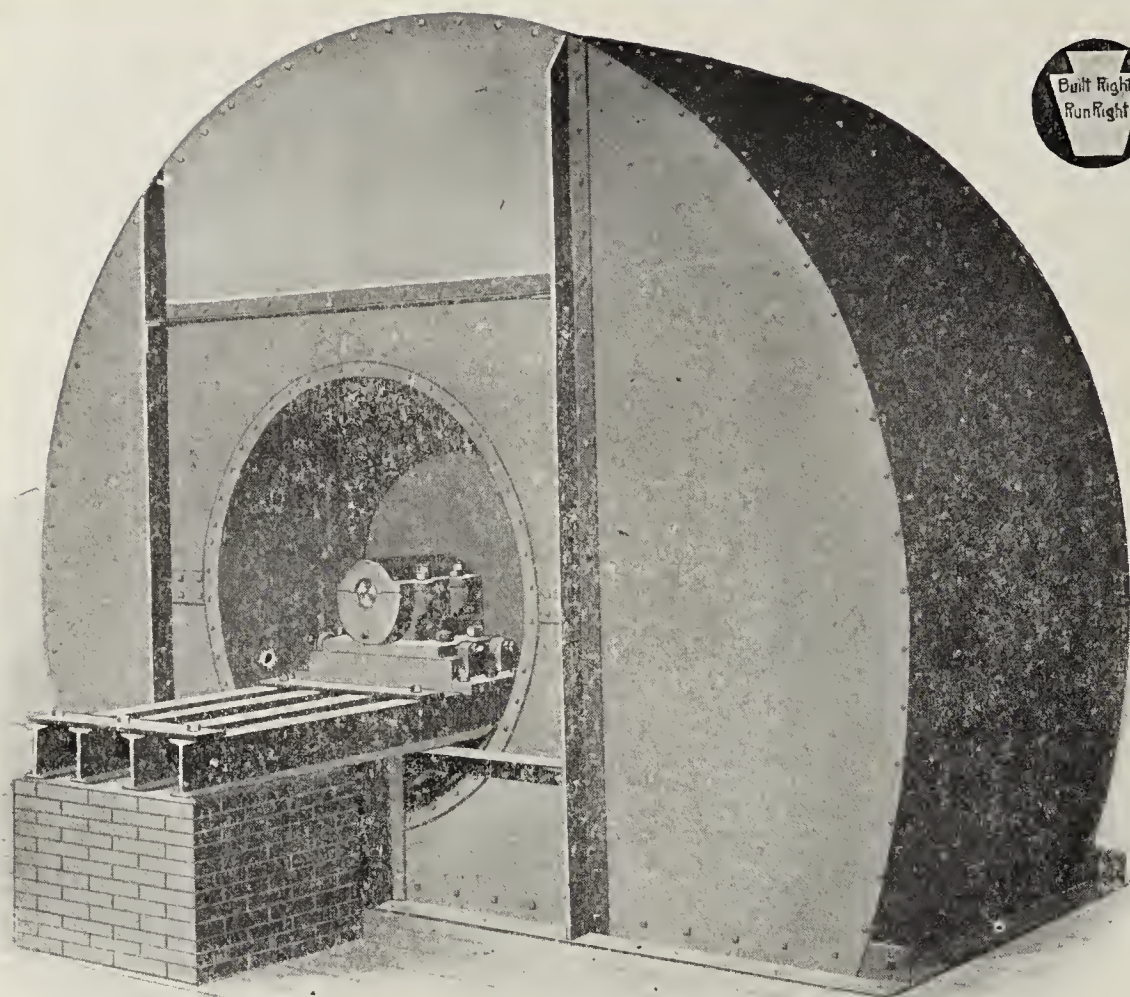


Disintegrators



Winding Drums

We are Much the Largest and Much the Most Extensive Manufacturers of Much the Best Clay Working Machinery in the World



Every Class of DRYER and Every Class the Best

We are Dryer Specialists in every sense of the word. We are not content with making one kind of Dryer, but make every kind. We are therefore in a position to consider your interests without any bias or prejudice toward any one kind of Dryer. This insures your getting a Dryer which will most successfully handle your clay, whether that Dryer be a Waste Heat, Steam, Hot Air, or Furnace Dryer. We build a full equipment for every Dryer in our factory, including Fans, Heaters, Cars, Transfers, Turntables, etc. We also build and equip Dryers operated by the carless system.

If you are in the market for a Dryer let us look over your plant, consider the clay and conditions, and design you a system that will be a success. Then if you place the order with us the equipment will be made in our own factory and will be of our standard quality.

As it is with Dryers, so it is with every class of Clayworking machinery. We build a full line for making Clay Products by every known process.

The American Clay Machinery Co.

Bucyrus, Ohio, U. S. A.

**ALWAYS
ON HAND**

THE AMERICAN CLAY MACHINERY Co.

Willoughby, Ohio, U.S.A.

**PLANTS
DESIGNED**

**COMPLETE EQUIPMENT
FURNISHED,
AND INSTALLED
SET IN OPERATION**

SAND-LIME BRICK MACHINERY

GRIZ

FOR SALE—ENGINES AND BOILERS

BOILERS

4 72x18, Horizontal Tubular, High Pressure,
 1 84x18, " " Standard
 1 78x16, " " "
 1 72x18, " " "
 5 72x16, " " "
 1 66x16, " " High Pressure
 1 60x10, 6 inches Rivetted Flue, Standard
 3 60x16, Horizontal Tubular, "
 Sixty others, all styles and sizes.

ENGINES

20x48 Wheelock, 18x26 H. S. & G.,
 18x42 Hamilton, 16x20 Brownell,
 18x36 Wright, 14x20 Atlas,
 16x32 Buckeye, 14x14 Vertical.
 Forty others, all sizes and styles.
 Also Pumps, Heaters, Tanks, Saw Mills, and
 general Machinery. Send us specifications of
 your wants.

THE RANDLE MACHINERY CO.
 1732 Powers St. CINCINATI, OHIO

Perfection in Block Making

If you wish to attain this you should
 combine these three important features:

Wet Process Face Down Damp Curing

The **Pettyjohn Invincible Machine**
 does this, and is the only machine that
 does. Tandem Invincible makes two
 blocks at once. Price \$65 and up. Single
 Invincibles \$35 and up. With our **Triple
 Tier Racking System** green blocks
 can be stacked three high direct from
 machine with inexpensive home-made
 rigging. Plans and blue-prints free to
 customers. It economizes space, reduces
 off-bearing distance and above all insures
 slow, even, damp and perfect curing and
 bleaching.

Write for our latest edition of "Stone
 Making," a book of valuable data, just
 off the press—Free.

THE PETTYJOHN COMPANY
 622 N. 6th Street TERRE HAUTE, IND.

POSITION WANTED

Young man with practical experience,
 covering a period of fifteen years
 desires position as manager of a large
 brick concern.

An organizer, thoroughly conversant
 with the most up-to-date methods in
 use in the various plants throughout
 the country together with a wide
 personal acquaintance among the con-
 sumers.

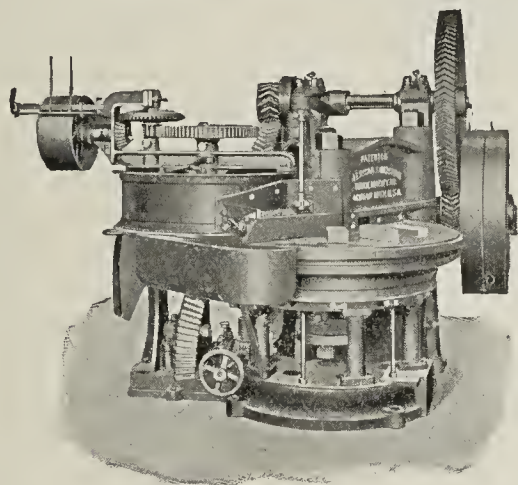
Possesses executive ability and
 understands the business from clay
 bank to scaffold. At present manages
 a business whose out put is annually
 thirty millions, but desires a change
 which will give a still larger field
 for his energies.

Only those whose business is suf-
 ficiently large to warrant there pay-
 ing for the services of a high-class
 man need apply.

Address A. B. C. care of Clay Record

The American Sandstone Brick Machinery Co.

INCORPORATED APRIL, 1902
 SAGINAW, W. S., MICH.



Improved Saginaw Rotary Presses

Are now being built with extra table for making fancy brick,
 on which double pressure is exerted.

Don't confuse our Practical System with the so-called
 Scientific Systems. We confine ourselves to the manufacture of
 machinery for making brick from sand and lime; installing the
 complete plant, starting and operating at our expense until at
 least 100,000 brick are made before asking for a settlement.

Our plants are **installed under the supervision of Prac-
 tical Engineers who know how Sand-Lime Brick should be
 and can be made.** We have **Practical Plants Running
 Successfully** to show to prospective investors.

WE ARE NOT SCIENTISTS

We **Produce Results**, because we are the **Oldest Practical
 Sand-Lime Engineering Company Doing Business in the
 United States**, and we defy contradiction.



Main Yard and Office
 South Boston, Va.

Branch Yard Banister River,
 Branch N. & W. Ry.

BOSTON BRICK COMPANY

Manufacturers of Plain and Fancy
 Brick, Cement Brick and Blocks

H. W. COSBY, Superintendent and General Manager.

South Boston, Va., January 19, 1907.

Marion Machine, Foundry and Supply Co.,
 Marion, Ind.

Gentlemen:—

As regards the Rust Clay Feeder we bought of you last year, will say
 it has been in use in our branch yard at Houston, Va., since last July and
 is giving PERFECT SATISFACTION. It practically saves us two men
 besides doing the work BETTER and with REGULARITY.

The greatest trouble brick men have is getting hands to feed regu-
 larly—they will over feed and choke the machine break or run belts off
 and then sit down and rest while the owner labors to repair and start up
 again. Your Clay Feeder is perfect and is indispensable to any brick
 manufacturer who wishes to make a good brick at lowest cost.

Yours truly,

Signed by H. W. COSBY, Supt. and Gen. Mgr.

BOSTON BRICK CO.

Marion Machine, Foundry and Supply Co.
 Marion, Ind.

WHY MAKE YOUR OWN BRICK CUTTING WIRES

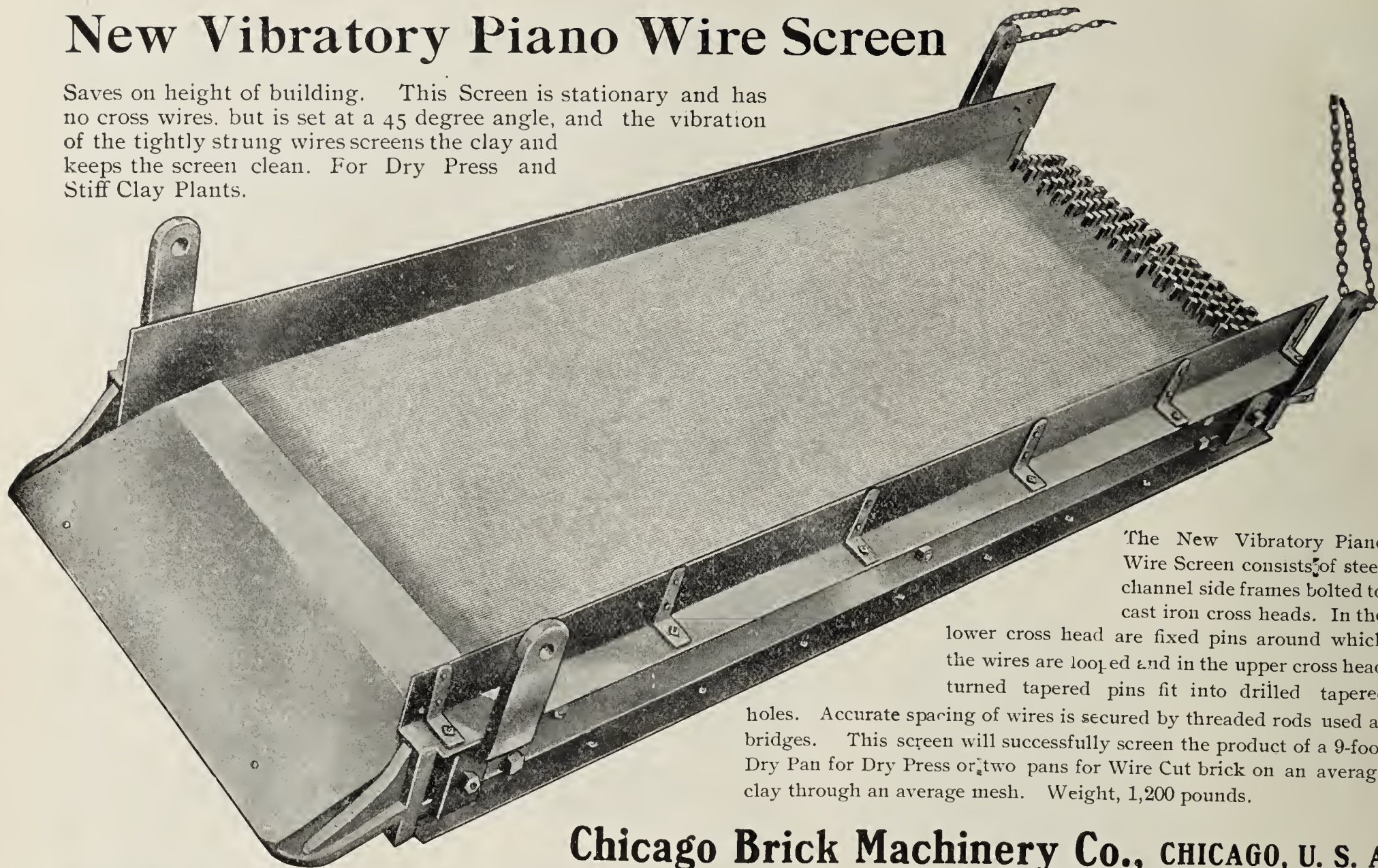
When You Can Buy Ready Made Cheaper?

SEND FOR SAMPLES AND PRICES.

GEORGE S. COX, East Liverpool, Ohio.

New Vibratory Piano Wire Screen

Saves on height of building. This Screen is stationary and has no cross wires, but is set at a 45 degree angle, and the vibration of the tightly strung wires screens the clay and keeps the screen clean. For Dry Press and Stiff Clay Plants.



The New Vibratory Piano Wire Screen consists of steel channel side frames bolted to cast iron cross heads. In the lower cross head are fixed pins around which the wires are looped and in the upper cross head turned tapered pins fit into drilled tapered holes. Accurate spacing of wires is secured by threaded rods used as bridges. This screen will successfully screen the product of a 9-foot Dry Pan for Dry Press or two pans for Wire Cut brick on an average clay through an average mesh. Weight, 1,200 pounds.

Chicago Brick Machinery Co., CHICAGO, U. S. A

MANGANESE

FOR ALL USES.

LUMP, GRAIN AND GROUND

60-70% 70-80% 80-90% OXIDE.

CLAY WORKERS GOODS A SPECIALTY.

SAMPLES AND PRICES ON INQUIRY.

KENDALL & FLICK

WASHINGTON, D.C.

Do Your Brick Turn White?

HERE IS THE REMEDY.

PRECIPITATED

Carbonate



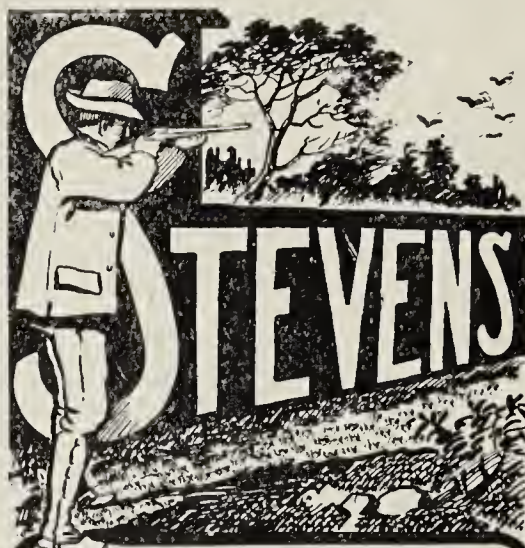
of Barytes

The only preventative for scum and discoloration on facing Brick and Terra Cotta; neutralizing the Sulphate of Lime in the Clay and Water.

Circulars and Particulars on Application.

GABRIEL & SCHALL

205 Pearl Street NEW YORK P. O. Box 1712



THE TONIC ATMOSPHERE

of the woods and fields acts like magic on the tired, overworked man. Get a STEVENS and shoot straight at the object, be it target or game. Equipped with our make means bringing down the bird or beast and making record target shots. Our line:

RIFLES • PISTOLS • SHOTGUNS
Rifle Telescopes, Etc.

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Send 4c in stamps for 140 page catalog describing the entire STEVENS line. Profusely illustrated, and contains points on Shooting, Ammunition, Proper Care of Firearms, etc.

Beautiful three-color Aluminum Hanger will be forwarded for 10 cents in stamps.

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CHICOPEE FALLS, MASS., U. S. A.

Clay Record

Is semi-monthly

It Costs

One Dollar

A Year

C. K. WILLIAMS & CO.

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BRICK AND MORTAR

COLORING

NOW READY—A TREATISE ON

**PRODUCER-GAS and
GAS-PRODUCERS**

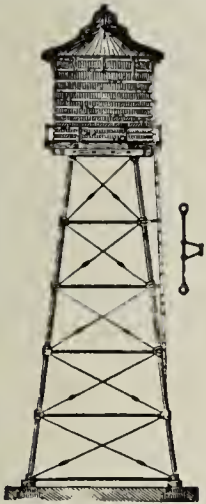
BY AN ACKNOWLEDGED AUTHORITY.

A 300-page book containing thirty chapters, giving the fundamental principles and definitions, calculations, classifications, manufacture and use; the fuel, the requirements, the history, its by-products, Producer-Gas for firing kilns, steam boilers, and power plants. The future of the Gas-producer and a bibliography.

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A subscription to the CLAY RECORD for one year without additional charge to those that are not now subscribers.

CLAY RECORD PUBLISHING COMPANY
CHICAGO, ILL.



Absolutely safe and reliable.

Ask your friends

A WOODEN TOWER

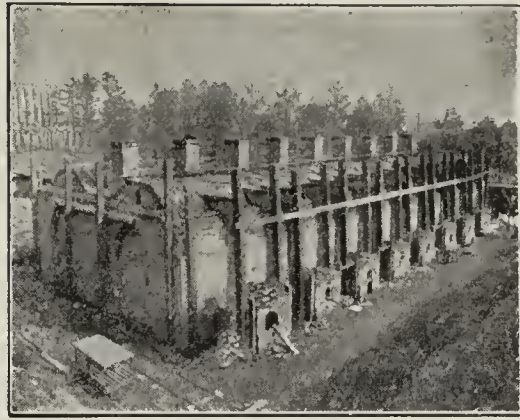
Is a source of annoyance and danger. It is liable to rot and collapse at any time. A

CALDWELL STEEL TOWER

is safe, staunch and durable and will carry four times the weight of the filled tank. Expensive labor is not necessary to erect these outfits, your own men can do it. We furnish all plans.

Send for illustrated catalogue and price list.

W. E. CALDWELL CO., - Louisville, Ky.

Something New In Brick Kilns and Dryers

The Dennis Double Chamber Up and Down Draft Brick Kilns and Direct Heat and Hot Air Brick Dryers show many new features that make them superior to all others. Economical, durable and strong in construction and operation, having many points of advantage that appeal to practical brick-makers. Patented April 14, 1903 and September 8, 1903. Brick plants installed and put in operation. Write for booklet. Correspondence solicited.

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145 Water St., Norfolk, Va.

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With special reference to those of the United States, by Heinrich, Ries Ph. D.
8 Vol. 490 pages, 65 figures, 44 plates

PRICE \$5.00 NET

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Chicago, Illinois

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Approved, Tested and Labeled by the Underwriters' Laboratories

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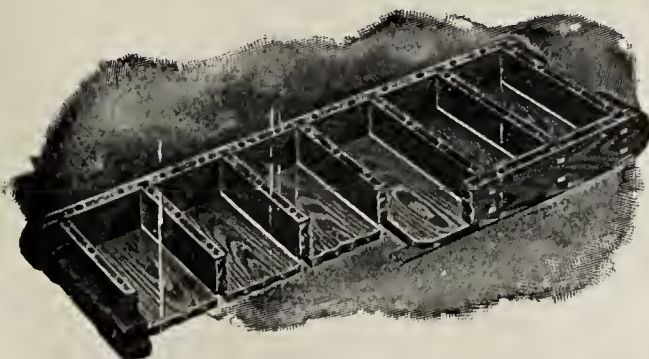
Sole Manufacturers

UTICA - - - N. Y.

**Brick Moulds and
Brick Barrows**

With Moulds and Barrows it is not the first cost, but it is, will they last? We have made them for over 30 years and know your wants. All kinds and shapes. A trial order will convince.

James B. Crowell & Son,
Wallkill, N. Y.

PERFECTION BRICK MOULDS

These are the kind of Brick Moulds the Brick Makers have always wanted but could not get till now. You can get a mould that the vents are right all the time. No change whether the Mould is wet or dry. Try a sample order. Satisfaction guaranteed.

PATENTED JAN. 28, 1902.

THE ARNOLD-GREAGER CO.
Manufacturers of Brick Machinery
and Supplies of all Kinds.
NEW LONDON, OHIO.

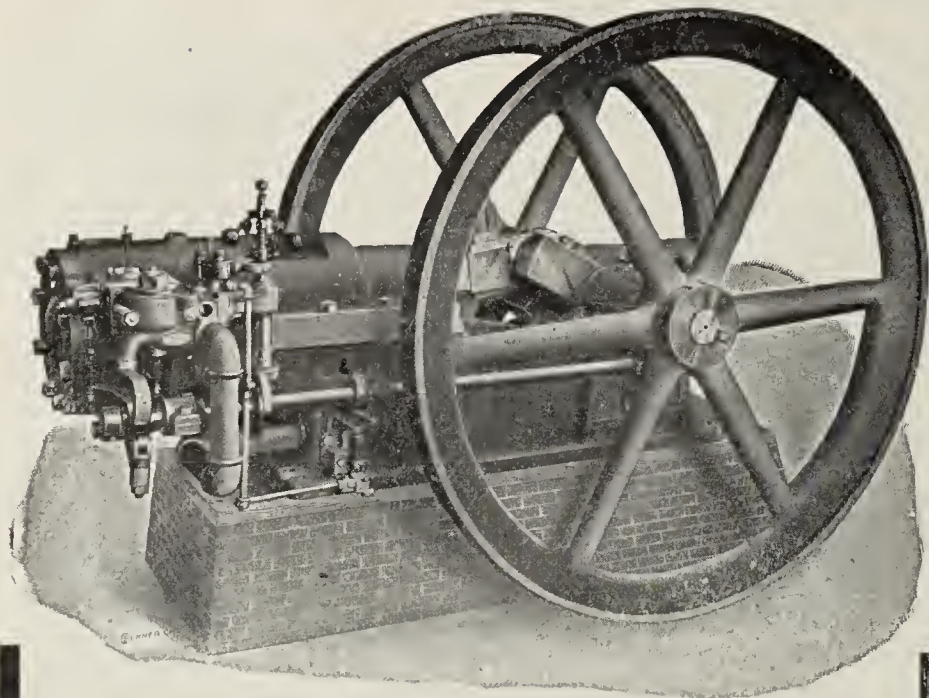
H. M. DEAVITT,
PRACTICAL AND CONSULTING CHEMIST,
Garden City Block,
CHICAGO.

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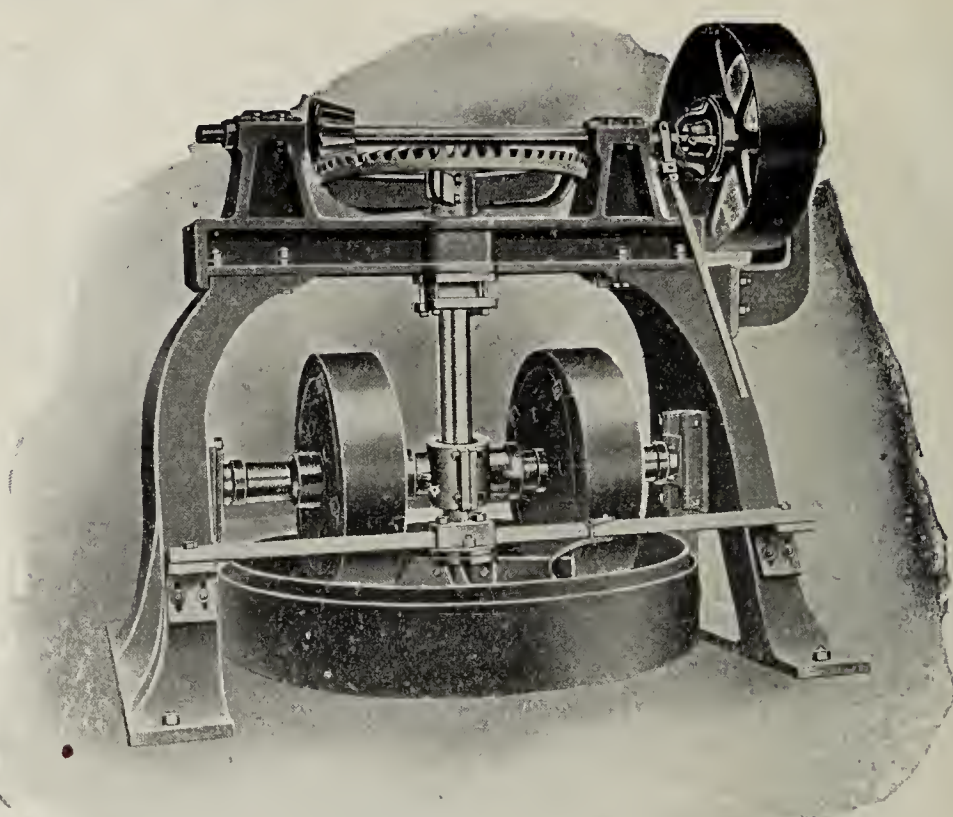


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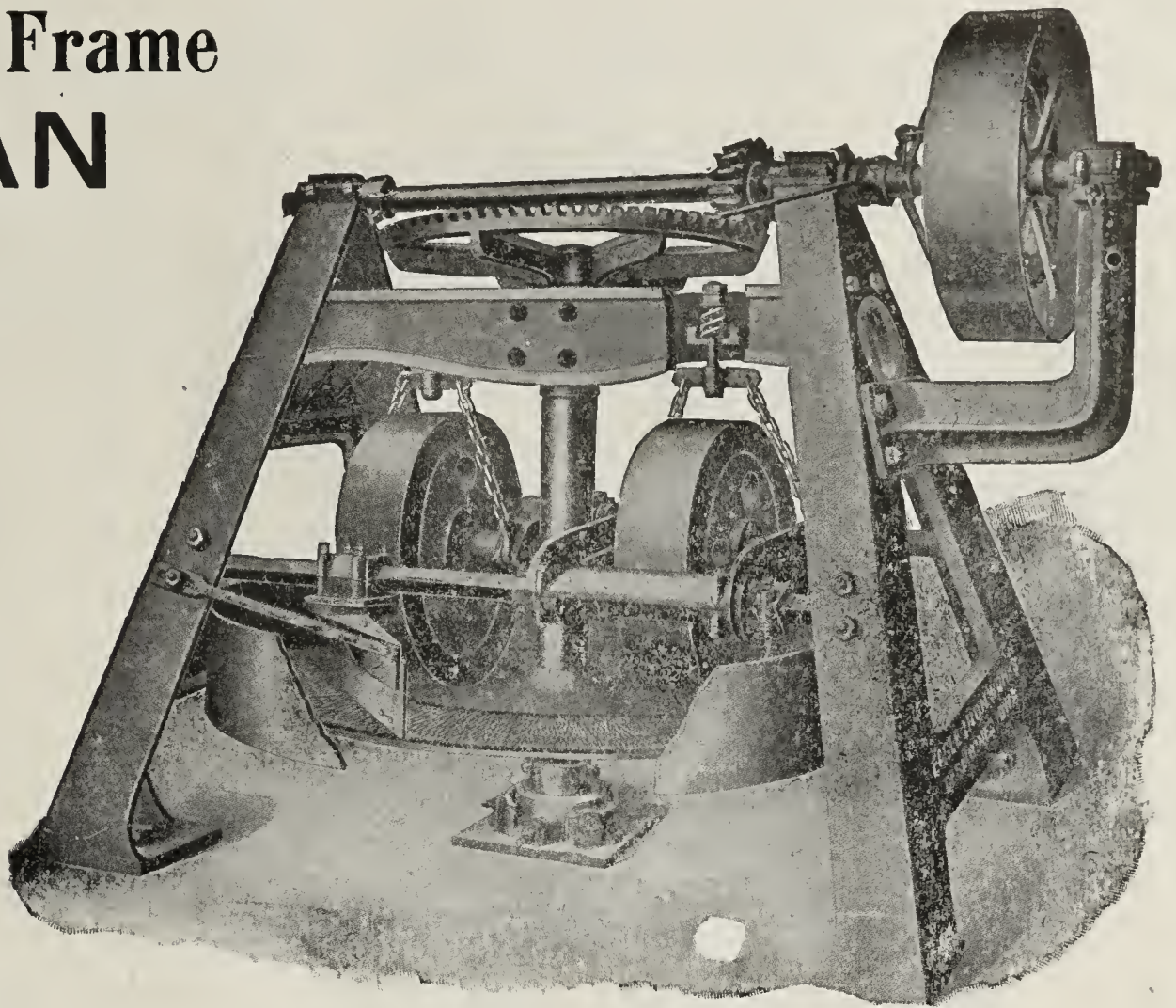
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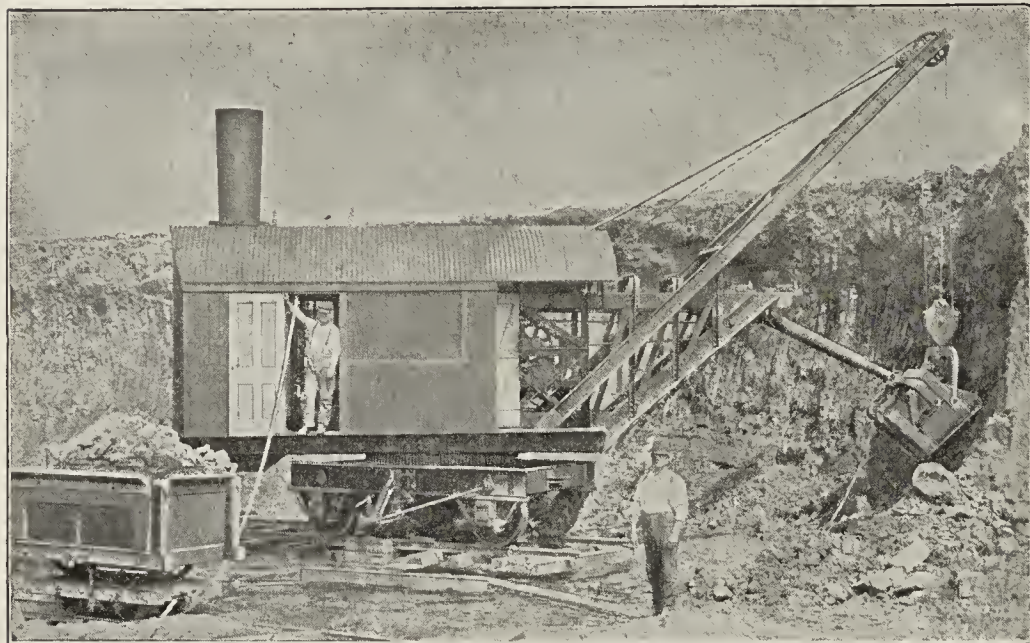
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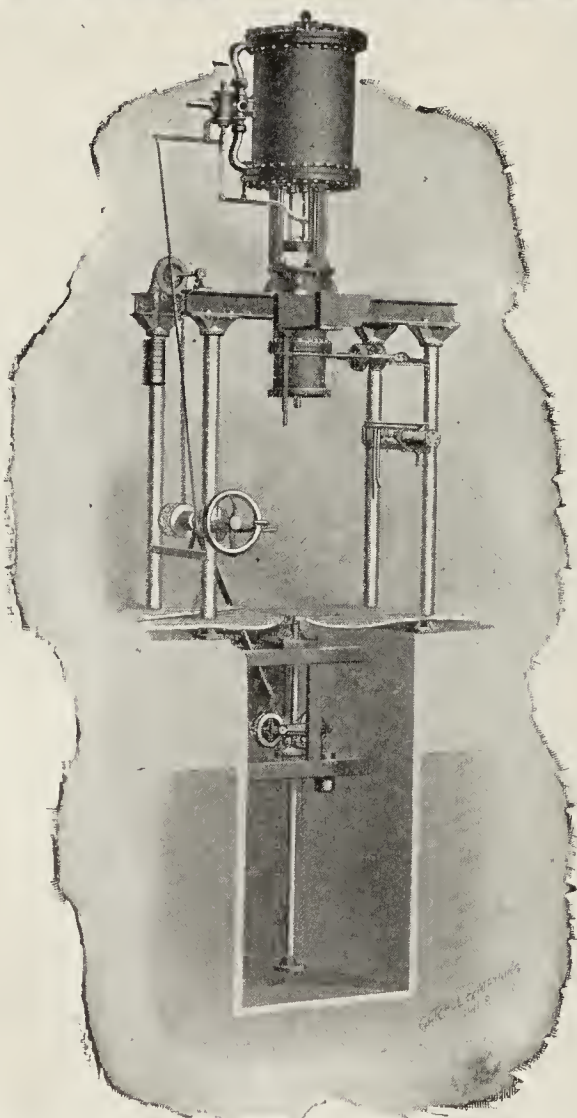
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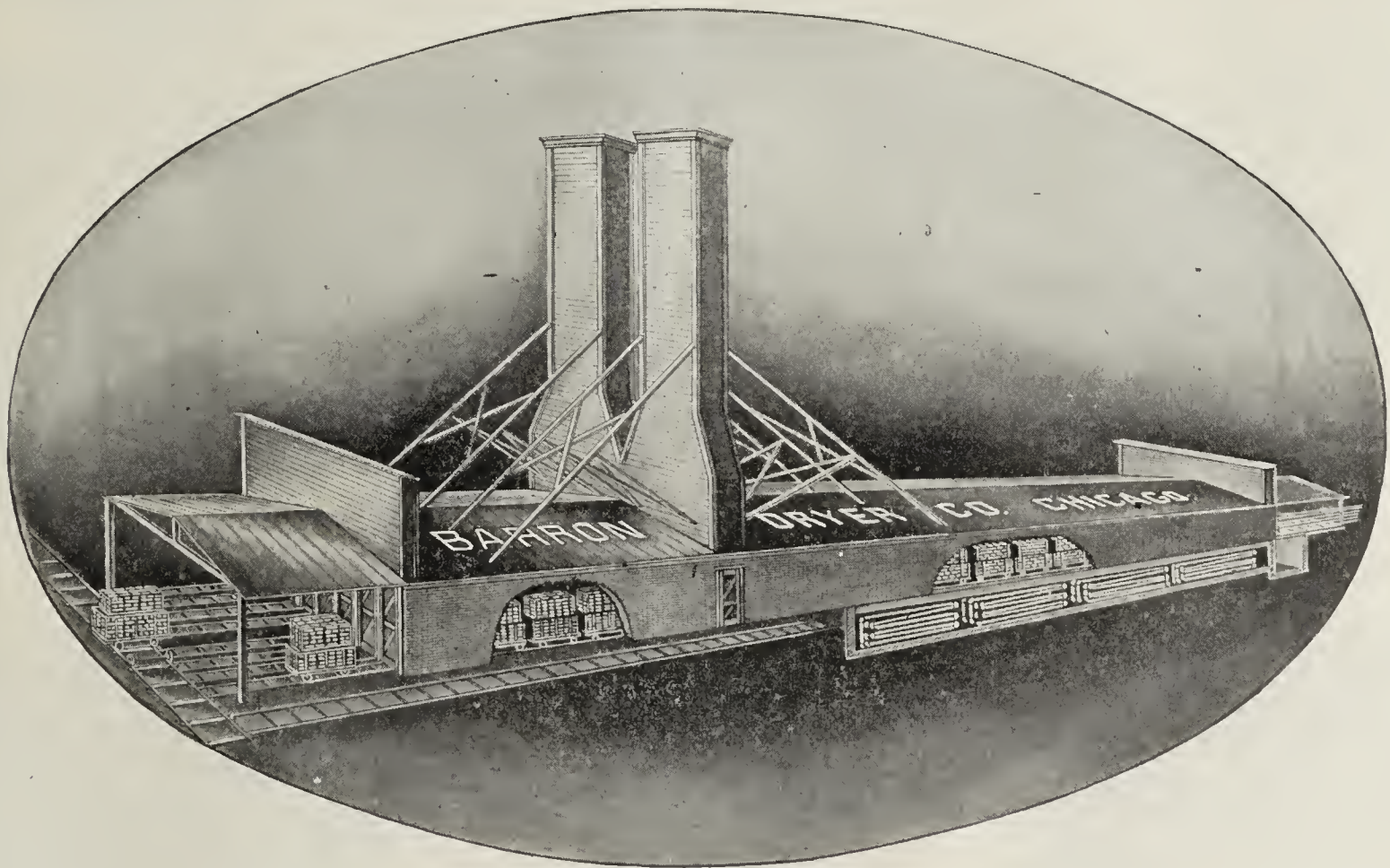
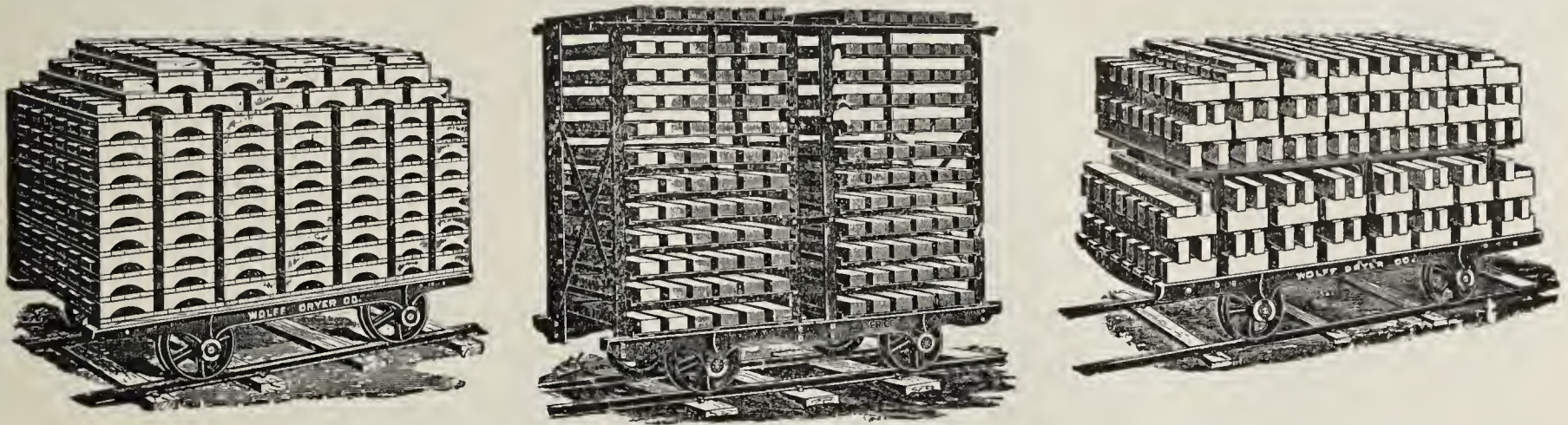
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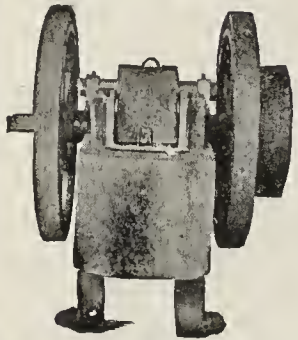
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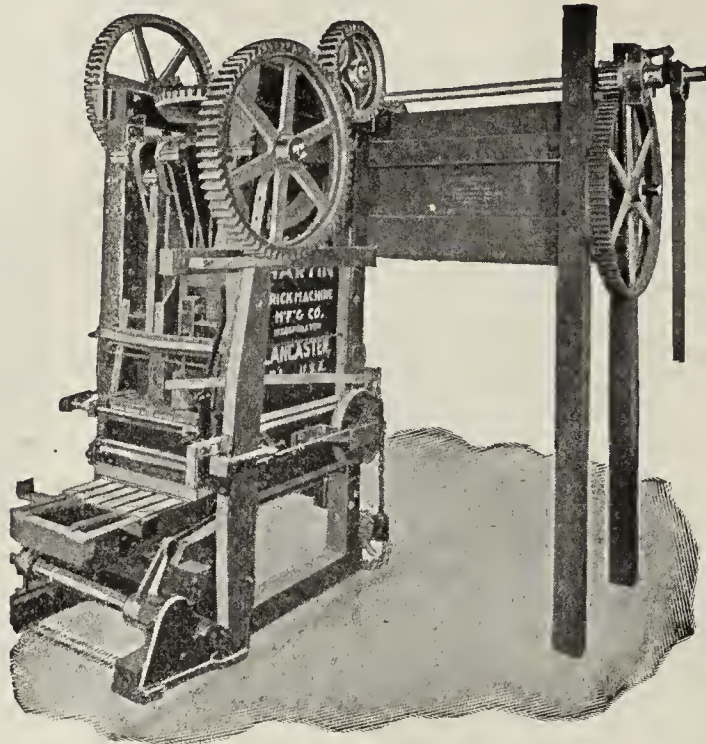
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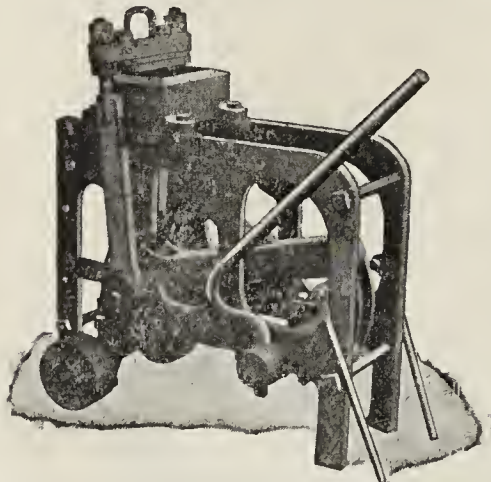
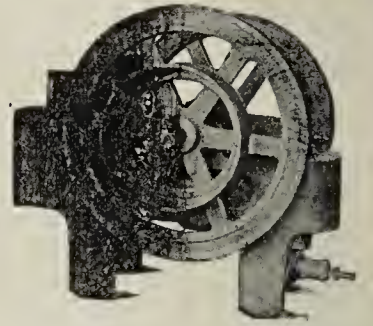
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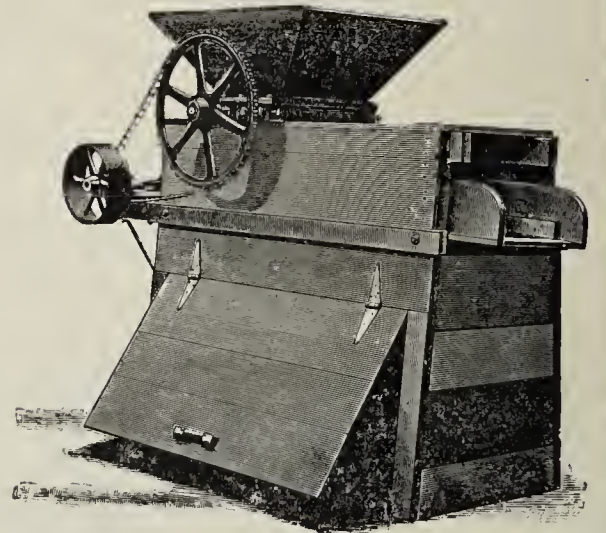
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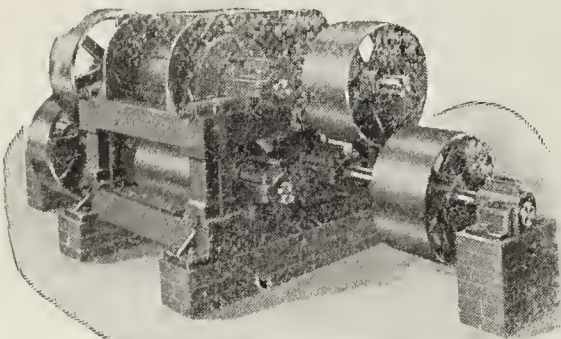
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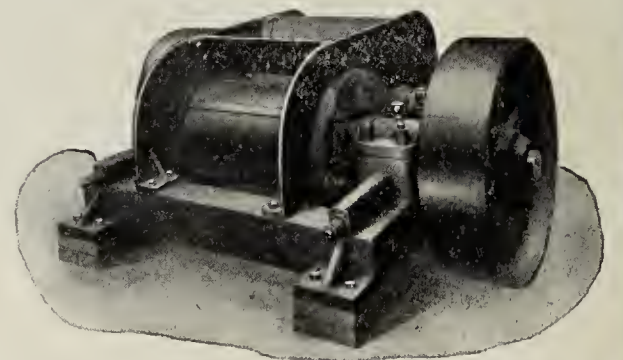


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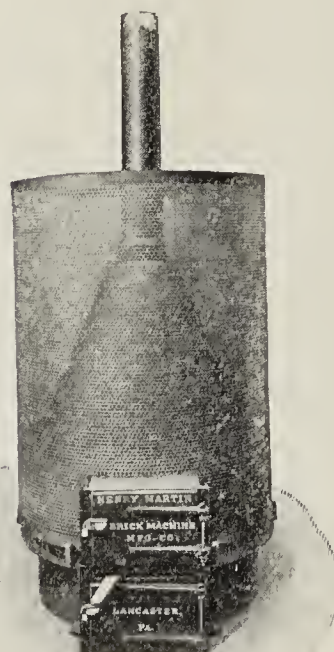
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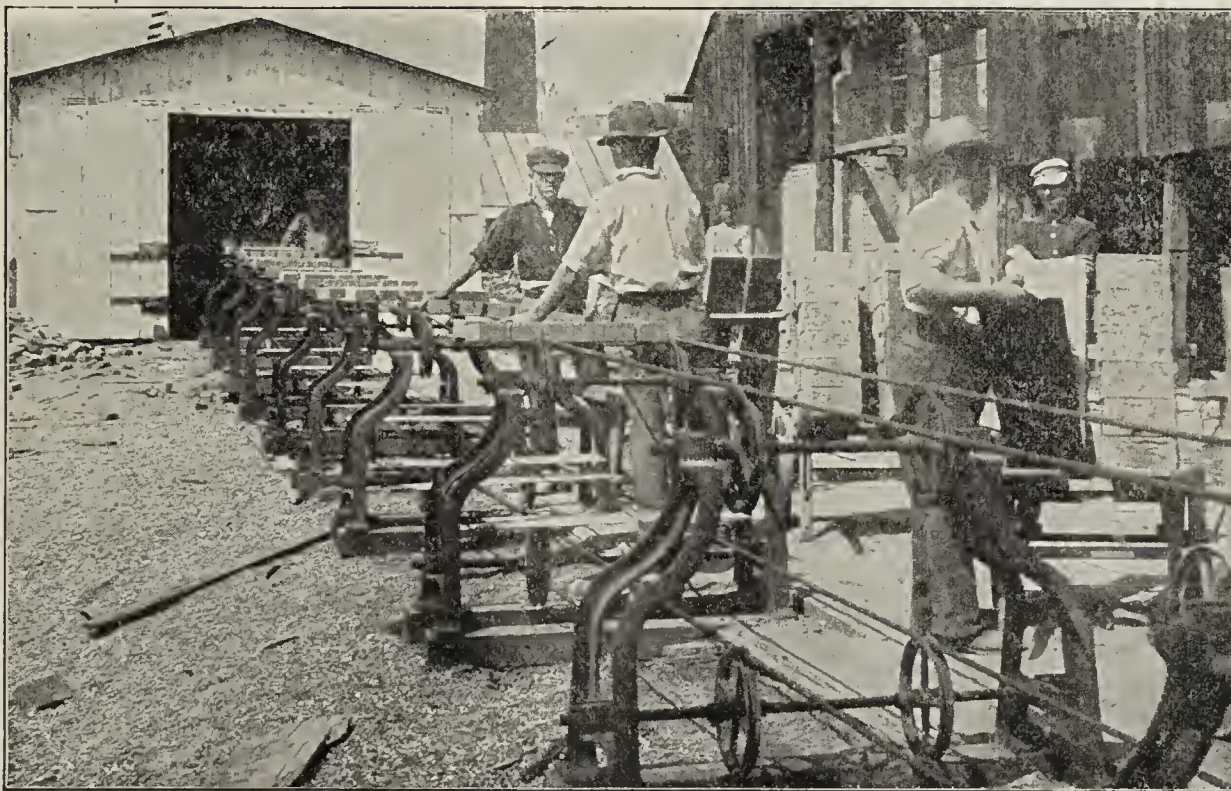
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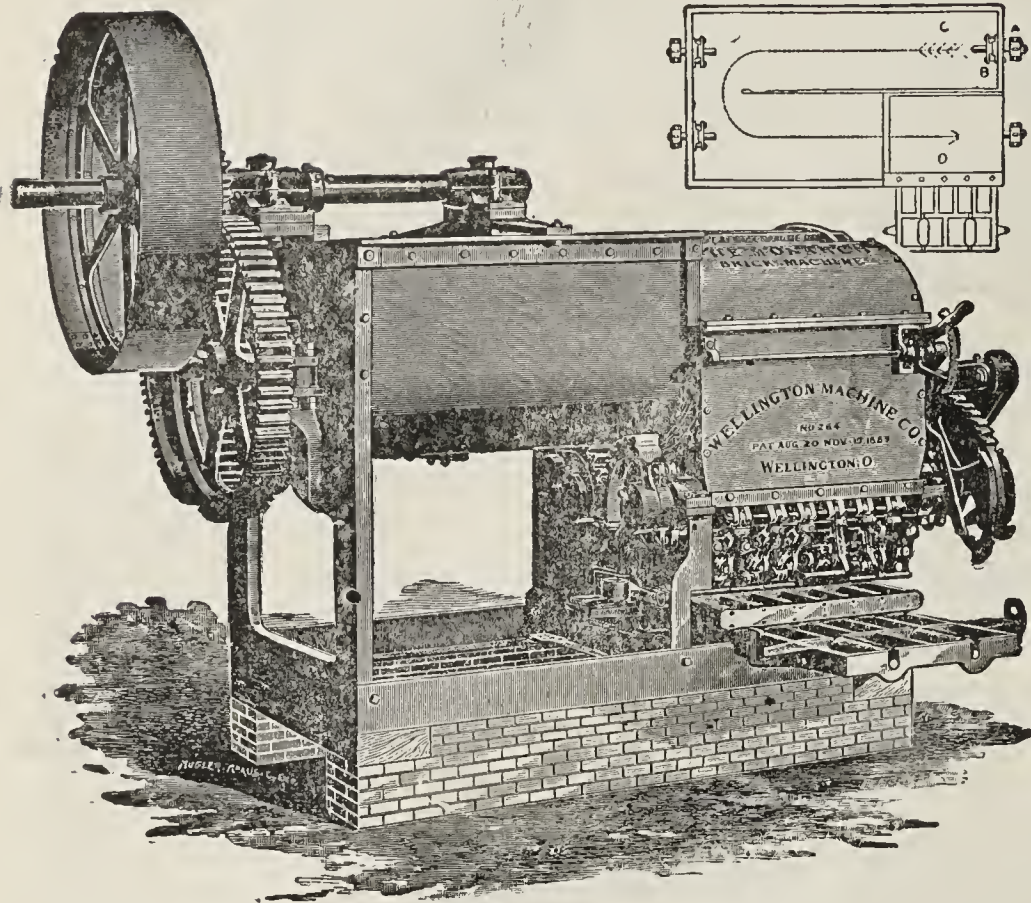
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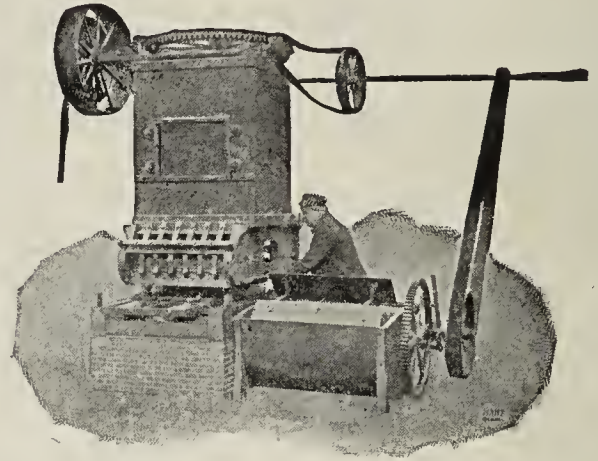
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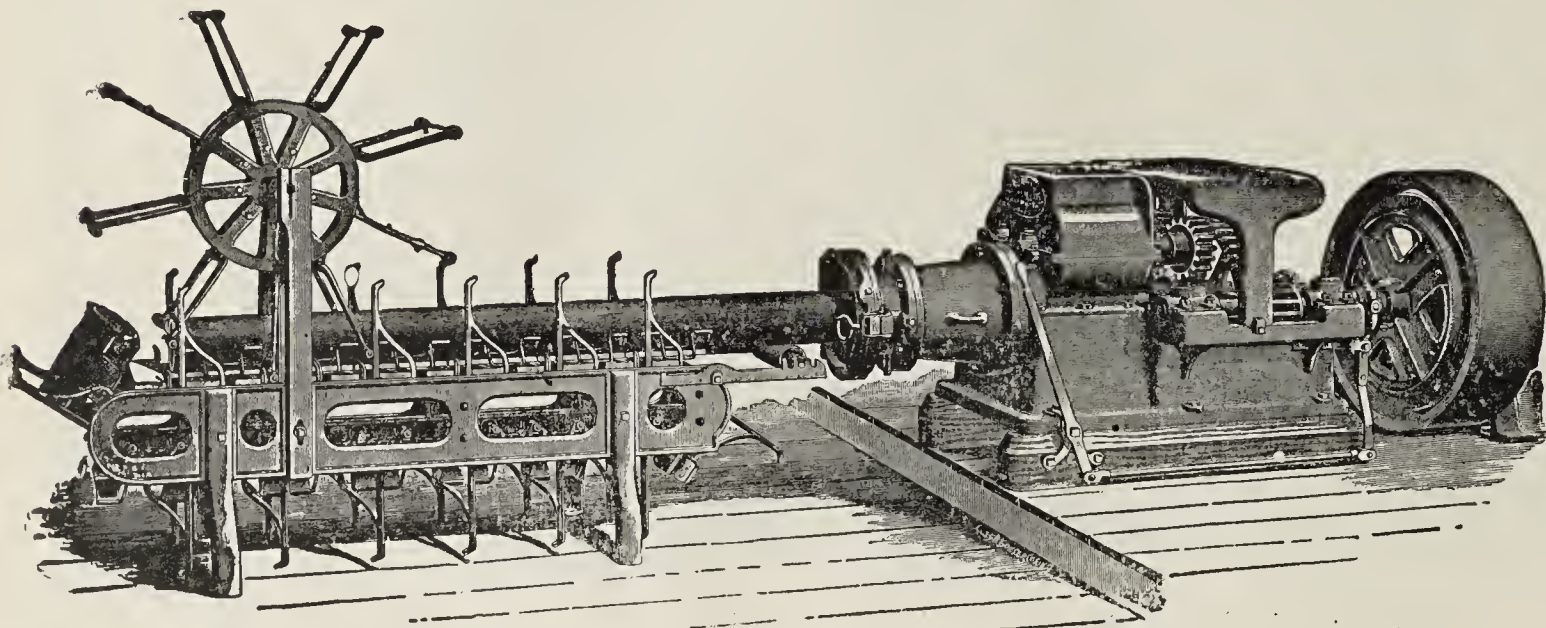
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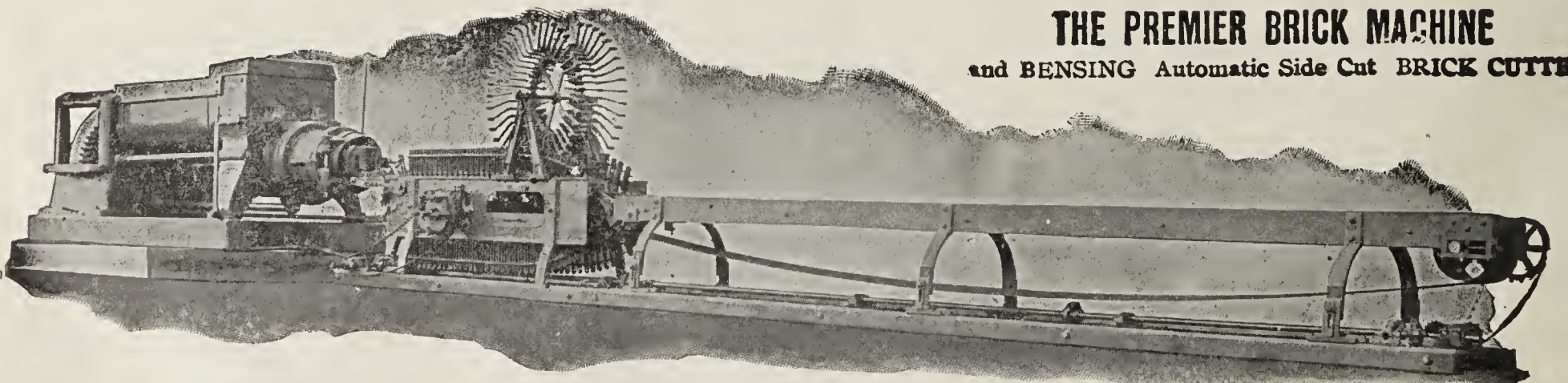


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